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AN EVALUATION OF THE INDUSTRIAL ARTS PROGRAM IN THE GOVERNMENT SCHOOLS OF ANTIGUA AND BARBUDA

by

© ALFRED M. ALEXANDER

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled, "An Evaluation of the Industrial Arts Program in the Government Schools of Antigua and Barbuda," submitted by Alfred M. Alexander in partial fulfillment of the requirements for the degree of Master of Education.

Darius R. Young
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Henry R. Lee

Date 29 September, 1981

ABSTRACT

Program evaluation has become an important characteristic of contemporary educational practice. For many years, industrial arts has been an integral part of the curricula offered in the schools, but this program has never been evaluated to determine its merits or problems. This investigation was conducted as an attempt to evaluate the industrial arts program of studies in the schools of the State of Antigua and Barbuda, and to suggest recommendations for the improvement of the program.

The research instrument used in this study was a modified version of Section 4-10, Industrial Arts, of the Evaluative Criteria 5th Edition, 1978, published by the National Study of Secondary School Evaluation. Permission was granted to use the research instrument and to introduce changes necessary to facilitate the Antigua situation.

The research instrument consisted of six principal headings: organization, nature of offerings, physical facilities, direction of learning, outcomes, and special characteristics of the industrial arts program.

Permission to conduct the research was sought from the Chief Education Officer of Antigua, and full cooperation was extended to the researcher by the Ministry of Education. The Acting Supervisor of Industrial Arts was assigned to assist in the coordination process.

In the course of the study the researcher travelled to Antigua to meet with educational and school personnel, and to outline the purpose of the study and introduce the evaluation instrument. It was found that there were twelve institutions in which industrial arts facilities were functioning.

The scope of the study was State-wide, involving the establishment of a Self-Evaluation Committee in each participating school. The principal, the industrial arts teachers, and two senior industrial arts students comprised an evaluation committee. The participants cooperated to the extent that all the questionnaires were completed and returned.

The findings of the study led to the general conclusion that the industrial arts program in Antigua was considered satisfactory by the participants in these aspects: the nature of offerings, the direction of learning (instructional staff, instructional activities and methods of evaluation), and outcomes. The program was considered unsatisfactory by the participants in these aspects: organization, physical facilities, and direction of learning (instructional materials). The findings of the study, however, were inconclusive about special characteristics of the industrial arts program in Antigua.

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CHAPTER I

INTRODUCTION

Orientation to the Problem

The State of Antigua, with its dependencies, the islands of Barbuda and Redonda, lies on the outside of the Leeward Islands chain between 61 and 62 degrees West and 17 and 18 degrees North. The islands are small: Antigua has a land area of only 108 square miles, Barbuda--62, and Redonda, a rocky islet, is less than half a square mile in area. Figure 1 shows the geographical position of Antigua.

> Antigua is a state in association with the United Kingdom with full internal self-government. The population in 1976 was estimated at 72,000 people. (West Indian and Caribbean Yearbook, 1976-77, p. 287)

The Antigua Education Act of 1972 provides for a public system of education organized in three stages (primary, secondary and further education including part-time education) and the establishment of a National Advisory Council of Education (p. 3).

The 1975-77 Antigua Education Statistics indicated that there were 13,270 pupils registered in the State's government-run 31 primary and nine secondary schools. In further education, there were 311 students registered in different programs at the State College (p. 50).

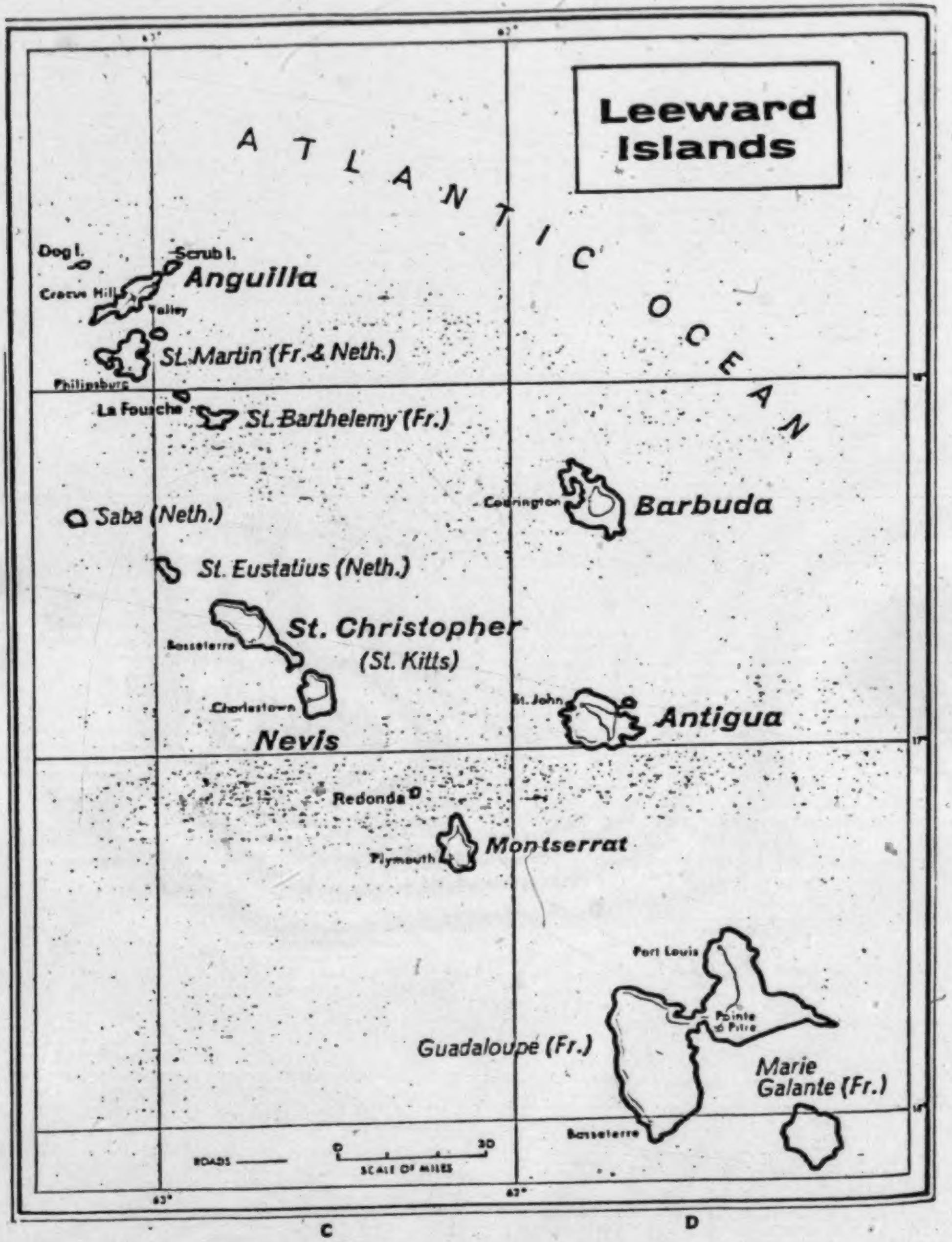
Leeward Islands
ATLANTIC OCEAN
Dog I.
Scrub I.
Anguilla
Crocus Hill
Valley
St. Martin (Fr. & Neth.)
Philipsburg
La Fourche
St. Barthelemy (Fr.)
Saba (Neth.)
St. Eustatius (Neth.)
Codrington
Barbuda
St. Christopher
(St. Kitts)
Basseterre
Charlestown
Nevis
St. John
Antigua
Redonda
Montserrat
Plymouth
Port Louis
Pointe à Pitre
Guadaloupe (Fr.)
Marie Galante (Fr.)
Basseterre
ROADS
0
30
SCALE OF MILES
C
D

Figure 1. Geographical Position of Antigua (Caribbean Yearbook)

In addition to the basic subjects of language arts, mathematics, social studies, science and others, a program including woodwork, metalwork, drafting and general electricity (entitled Industrial Arts) is included in the curriculum for the primary and secondary schools.

> There are 12 schools with industrial arts facilities in Antigua. However, these facilities are used to cater for additional pupils in adjacent schools. Because of this arrangement of sharing facilities, pupils from 20 schools, both primary and secondary, have access to industrial arts courses. In December, 1976, a total of 2,140 pupils were enrolled in the industrial arts program. (1975-77, p. 38)

The Antigua Industrial Arts Curriculum of 1977 states that industrial arts is a part of general education and will be made available to all students. Industrial arts is concerned with interpreting the world of work; industry is a salient component. In accordance with the Antigua educational objectives, industrial arts students should derive the following benefits: (a) personal growth; (b) growth in family living; (c) growth towards competence in citizenship; and (d) occupation preparation (p. 3).

Statement of the Problem

The primary purpose of the study proposed here is to document and evaluate the industrial arts program in the government schools in the State of Antigua. An evaluation of the program has never been conducted. There is a lack of information to substantiate the merits or problems of the program.

Objectives of the Study

This study has the following general objectives:

1. To document the organization, the facilities, and the curriculum of the industrial arts program in the schools;
2. To evaluate the industrial arts program that is operating in the schools; and
3. To determine how adequate the schools are equipped to offer the basic requirements of the curriculum.

The specific objectives of this study are to evaluate the following areas of the industrial arts program in the schools of Antigua:

1. The organization;
2. The nature of offerings;
3. The physical facilities;
4. The direction of learning, including: (a) instructional staff; (b) instructional activities; (c) instructional materials; and (d) method of evaluation;
5. The outcomes of learning; and
6. The special characteristics of the industrial arts in the schools.

Delimitations of the Study

The study has the following delimitations:

1. The study is delimited to the industrial arts program in the 12 schools in Antigua offering courses in industrial arts; and

2. The research is limited to the validity of the responses provided by the Self-Evaluation Committees for industrial arts, which was established in each participating school.

Assumptions

The study has the following assumptions:

1. That it is possible to obtain a candid assessment of the industrial arts program through self-evaluations made by the committee members;
2. That the committee members understood the questions and will provide valid responses with reference to the industrial arts program in their school;
3. That the modified evaluation instrument used was adequate to evaluate the industrial arts program in the schools of Antigua; and
4. That the industrial arts teachers were indeed competent educators in their selected fields.

Significance of the Study

Education is a dynamic process. For this reason periodic and stringent evaluations are necessary to produce relevant data about various programs in operation in the school situation. This study will attempt to provide such data about the industrial arts program in Antigua. The data obtained will indicate areas of strengths and weaknesses and could be useful for improvement by the teachers concerned in their ongoing program.

> No human enterprise deserves support unless there is some form of demonstrated evidence of its value in achievement of worthwhile purpose. (Hicks, 1965, p. 405)

The administration and planners in the Ministry of Education may wish to use the information obtained towards modifying their planning, financing and the overall structuring of the industrial arts program.

The study will provide information for all industrial arts teachers in the State, and they can use the data to make their teaching more stimulating and their program more meaningful.

Teachers are interested in the results of their efforts; their morale is highly related to the understanding or belief they have regarding the functioning of their system.

Parents and citizens want to know how good their schools are so that judgments and criticism may be effectively centered by adequate facts.

Definitions of Terms

The following operational definitions are accepted for this study, and apply to the terms that will be used throughout the study.

Industrial Arts. Industrial arts is defined as those phases of general education which deal with technology--its evolution, utilization and significance; with industry--its organization, materials, occupations, processes, and product; and with the problems and benefits resulting from the technological and industrial nature of society (Curriculum Guide, 1977, p. 3).

Program. Program is defined as an outline of the contemplated procedures, courses, and subjects offered by a school over a given period of time.

Industrial Arts Facilities. Industrial arts facilities is defined as any room or building equipped for the purpose of industrial arts instruction (Aird, 1972, p. 6).

(The following definitions were taken from the Antigua Education Act, 1972, pp. 2-5.)

Primary School. A primary school is an educational institution which is nonselective, organized for and charged with the responsibility of the education of children from the ages of five to 16 years. It includes two main divisions: (a) the infant grades, five to seven years; and (b) the junior grades, seven to 12 years. A primary school was originally called an Elementary School.

All-Age School. This is a primary school with senior departments offering a free general education for children of all ages between five and 16 years.

Secondary School. A secondary school is an educational institution which is organized for and charged with the responsibility of the education of children selected generally at the ages of 11 to 12 years for a study of wider scope and more advanced degree than the primary school. It does not have fees and equips its students for careers in the public service, business, the professions, or further education, including university entrance. It caters to children in the age range of 11 to 20 years, i.e. Forms I-V; and entry to them is based on the performance of children of 11 and over in the common entrance examination set by the government. This is traditionally a grammar school of the British origin offering an academically oriented education. The terms 'High School,' 'Grammar School,' 'Academy' and 'College' are used interchangeably to describe the school which provides this type of education.

School Evaluation. School evaluation is the appraisal of achievement of individual students, to diagnose the learning problems of an individual student, or an entire class in order to provide information that will be helpful in planning subsequent teaching; to appraise the educational effectiveness of the curriculum, of instructional materials and procedures, and of administrative and organizational arrangements; and to assess the progress of large populations in order to provide the public with dependable information about educational problems and needs; and to guide our efforts to develop sound education policies (Tyler, 1966, p. 1).

Methodology

Population

The population of this study included the 12 schools offering industrial arts program in Antigua. In each school an industrial arts Self-Evaluation Committee was formed. The committee was comprised of the principal, the industrial arts teachers, and two senior industrial arts students. The student representatives may have been selected from past students who had completed the course or currently enrolled students with a minimum of three years industrial arts exposure. The principal convened the evaluation meetings and chaired the sessions.

Research Instrument

The instrument selected for the collection of pertinent data for this study is Section 4-10, Industrial Arts of the Evaluative Criteria, 5th edition, 1978, published by the National Study of Secondary School Evaluation. Permission to use a revised version of Section 4-10 was granted by the Executive Secretary of the National Study of Secondary School Evaluation.

Rationale for Instrument Selection

The Evaluative Criteria, 5th Edition (Section 4-10) was selected as an instrument for validity because it has been carefully critiqued and revised. The instrument was first published in 1940 and has been extensively used by individuals, both in the United States of America and other parts of the world, to evaluate educational programs.

Because of its extensive use, the Evaluative Criteria was revised several times. In the fifth edition, 1978, the authors reported:

> As was done during the period 1940-45 and 1950-58, the study made extensive effort from 1960-68 to obtain criticisms and suggestions from users of the materials. In addition to the suggestions returned in writing, the Director of Revision visited general meetings and workshops of the accrediting associations and also individual schools in order to discuss problems, sensitive areas and suggestions. (p. 5)

The developers of Evaluative Criteria also reported that altogether several hundred people throughout the United States helped to develop ". . . an up-to-date improved instrument" (p. 5).

The validity of Evaluative Criteria, 5th edition, rests on the fact that all the significant changes made in the criteria since its inception were those changes supported either by research or suggestions from experienced observers and informed specialists in various fields (p. 5).

The provision for users of the instrument to insert additional items and to eliminate irrelevant ones to suit the needs of any particular school situation served to extend the validity of the instrument for evaluating the industrial arts program in the schools in Antigua.

Procedures

In February, 1981, the researcher wrote to the Chief Education Officer in Antigua (see Appendix A) informing him of the area of the investigation and requesting permission to administer the research instrument in the schools that offered courses in industrial arts. Permission was granted and the researcher travelled to Antigua in June, 1981.

The Ministry of Education, through the Acting Industrial Arts Supervisor, accepted responsibility to distribute the research instrument to the twelve schools that qualified for participation in the study. A circular letter accompanied each copy of the instrument. The letter introduced the researcher, outlined the objectives of the study, and solicited the support and cooperation of all the members of the Self-Evaluation Committee.

The research instruments were mailed from Edmonton in April, 1981. The Acting Supervisor of Industrial Arts distributed them to the schools towards the middle of May, 1981.

Between June 1-5, 1981, the researcher made site visits to all the participating schools in Antigua, and to the school in Barbuda on June 26, 1981. During these visits the researcher explained the purpose of the survey to the principal and industrial arts teachers, and answered their questions concerning the formation of the Self-Evaluation Committee, the selection of student representatives, and misconceptions about items on the questionnaire. The researcher asked for a conducted tour of each industrial arts facility visited to obtain first hand information, and gather some impressions of the organization, range of facilities, and the working atmosphere in the workshops.

Three weeks after completing the site visits, the Acting Industrial Arts Supervisor received only three copies of the completed questionnaire. Follow-up visits were made by both the Acting Supervisor and the researcher, rallying the delinquent participants to complete the assignment. This effort yielded good results and the remaining nine completed instruments were received by July 10, 1981. The survey thus yielded 100 percent return.

Data Analysis

Twelve evaluation instruments were received. Because of the small number, the data was analysed by hand. Responses were tabulated and frequency tables were presented. Percentages were used to illustrate the number of participants who responded to each item-statement of the research instrument.

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CHAPTER II

BACKGROUND OF THE STUDY

In the previous chapter, an orientation to the study and a brief description of the methodology used to bring this study to a successful conclusion were presented.

This chapter provides the background of the study through a review of the literature and related research.

An Historic Overview of Antigua

Location and Contour

Antigua is an island in the Caribbean Sea and is the largest of a group of islands known as the Leeward Islands. It covers an area of 108 square miles and is situated between longitudes 61 and 62 degrees west and latitudes 17 and 18 degrees north. Antigua has two dependencies--the island of Barbuda (62 square miles) and Redonda, a rocky islet, less than half a square mile.

Antigua, with its capital St. John's, has deeply indented shores which are limited by reefs and shoals, but there are many natural harbours. The island is flat, and the highest point, Boggy Peak, elevates to 1,330 feet, in the southwest, and is of volcanic origin. In the north and east the land is undulating and flat.

Barbuda, formerly known as Dulcina, lies 25 miles north of Antigua, and is a flat coral island, with its highest point elevating to 143 feet.

Discovery and Colonization

The island was discovered by Christopher Columbus in the year 1493 on his second voyage to the West Indies, and named after the Church of Santa Maria de la Antigua, in Seville. Several attempts were made at settlement; in 1520, by the Spaniards, who found it too dry; in 1629, by the French under d'Esnambuc, who abandoned it in favour of the richer soil of St. Kitts; and in 1632, by the British, under Sir Thomas Warner, who eventually colonized the island.

Aborigines

The original inhabitants of the island were the Caribs. Their way of life consisted of farming, fishing, hunting and pirateering the seas. The Caribs suffered much from the colonizers who virtually eliminated them, save for a small reserve that survived in the island of Dominica.

Agricultural Crops

Following colonization, tobacco was the chief crop; however, in the second half of the 17th Century, it was found that sugar was more profitable. This required heavy labour; at first the defeated armies in the English Civil War were sent as slaves or indentured workers to the plantations in the West Indies, but when they performed poorly in the tropical climate, the trade in slaves from Africa began. It was at its height throughout the 18th Century.

The operation of the sugar estates was a profitable venture and the wars between the English and the French were over the possession of sugar islands. Because Antigua possessed a good harbour, English Harbour became the dockyard for the British West Indies throughout the 18th Century. The French only once made a successful landing on Antigua. The island never passed out of British hands and shows no trace of French influence today.

Slaves Emancipation

In 1834, Antigua emancipated its slaves, four years before the general emancipation in the British Empire.

Political Geography

Antigua is divided into six parishes--St. John, St. George, St. Mary, St. Peter, St. Phillip, and St. Paul. A parish is an administrative part of a diocese that has its own church.

St. John, in the north-west, includes the city of St. John's. This is the commercial center of the island and the people are mainly employed in clerical work.

St. George extends over the center and north of the island. In this parish is the island's only sugar factory, the Antigua Sugar and Estate Development Corporation, at Gunthropes. This area is gradually being developed into an industrial center. The people are mainly employed in agriculture and light manufacturing industries.

St. Mary is located on the southern side of the island. A beautiful line of hills, including Boggy Peak, and flat undulating plains give the appearance of a small but perfect valley. The soil is fertile and many vegetables are grown. The majority of the people are gardeners and fishermen.

St. Peter, situated on the north-eastern side of the island, includes Antigua's second town, Parham. There are no large commercial or industrial undertakings in this parish. The people are mainly fishermen, gardeners, or clerical workers.

St. Phillip is mainly a sugar cane and cotton growing parish, and the majority of the people are engaged in agriculture.

St. Paul extends from the center towards the south-east. A few hills and lovely bays form a natural attraction. Historic Nelson's Dockyard and Clarence House are located in this parish.

Barbuda is a sister island some 25 miles north of Antigua. Codrington is its only town, with a population of 1,300. It was in the electoral district of St. John's for some time, but is now represented in the Legislative Council. Fishing is the principal industry.

Population

The 1977 estimated mid-year population of Antigua was 72,355 with 34,460 males and 37,895 females. The proportion of the census population under 15 years was 44.0, the proportion 65 years and above was 5.2 and the dependency ratio per 100 was 9.7 (Population Census of Commonwealth Caribbean and Digest of ECCM Member States).

Structure of the Economy and Basic Economic Problems in Antigua

The lack of a sense of security with its attendant restlessness and frustration may be attributed to two factors, namely, the population of the island in relation to the limited resources, and its dependence on external economic forces over which it has no control. Limited resources impose a serious restraint on the scope for employment opportunities, and although there is an abundance of labour resource with relatively low wages to attract the inflow of foreign capital and investment projects, the critical shortage of skilled labour tends to negate the situation. British colonial policy has aided the extractive industries, i.e. agriculture, not the development of manufacturing, since the island imports manufactured goods from Great Britain. Like other Caribbean islands, Antigua depends heavily on imports for a wide range of goods including food and other necessities, while in the past her exports could be measured almost completely in terms of a few staple commodities.

During the 1960's, however, the Antigua economy received a tremendous boost which subsequently transformed its nature. Significant progress is being made towards the establishment of consumer and export industries using imported raw materials where local raw materials are deficient. The result is a shift in industrial activity in which production is no longer largely confined to the secondary processing of local agricultural produce.

The Fiscal Incentives Act, No. 18, of 1975, has been enacted with a view to encouraging the establishment of new industries, and to further the expansion and modernization of existing industries. Fiscal incentives concessions have been granted in respect to the manufacturing and assembling of motor cars, paints, electronic components, opthalmic lenses, refrigerators, gas ranges, garment manufacturing, hosiery products, toilet paper, metal and wood furniture, and biscuits. Special concessions have been granted in connection with the manufacture of petroleum products.

The Pre-Employment Training (PET) program has been instituted by the Ministry of Economic Development and Tourism to conduct training programs for employees in the industries as a result of the new skills being introduced by the industrialization program.

Tourism

Antigua, like other Caribbean territories, is alive to the value of its natural beauty and excellent climate as exploitable sources of revenue, and spends large sums each year promoting the tourist industry. The Antigua Tourist Board with offices in London, New York and Toronto, and headquarters at High Street, Antigua, advertises the island's charm abroad. Annual revenue realized from the industry amounts to several million dollars. The Antigua Hotel Association supplements the program by advertising abroad. Thousands are employed in the tourist industry.

An Historic Overview of Education in Antigua, 1632 - 1978

Minimal Education

The minimal educational provisions for education in the Leeward Islands and the Caribbean in general evolve from the nature of the plantation societies which were considered as adjuncts to the metropolitan countries. There, education was provided for the children of the planters. In the West Indies, education was not allowed, as it was felt it would make the slaves rebellious. It was not until the end of the 18th Century that the missionaries were allowed to Christianize the slaves and educate their converts. The missionaries found that their teachings tended to make the slaves obedient and cooperative. With emancipation, the

British Government made provision for grants for primary education in order to provide the minimal technical skills needed to bolster the society.

Education in the Post-Emancipation Period

In the early post-emancipation period, the responsibility for education continued to be left to the churches. Under the terms of the Negro Education Act, the British Imperial Government offered a grant of £30,000 per annum for five years. This grant was decreased each year until it ended in 1845. The grant which was turned over to the churches, was allowed to be used initially for school buildings, and later to help increase teachers' salaries. The aims of the Imperial Government were specifically to promote Christian education. These were spelled out clearly: ". . . instruction in the doctrines and precepts of Christianity must form the basis and must be made the inseparable attendant of any such system of education" (Gordon, 1963, p. 20).

The number of emancipated slaves in Antigua, according to the Colonial Office Memorandum of December 8, 1835, (Gordon, p. 26), was 29,537 and the first allocation was £1,000.

Decline in Education

The cessation of the Negro Education Grant brought about a decline in educational activity. As the Legislature refused to come to the aid of the churches, various measures were proposed and set in motion. Fees were introduced; taxes on produce were imposed; school was held in the morning and evening so that the labour of children would not be lost. Plans were also mooted for industrial education as the content of Negro education came under attack from the planter-dominated assembly as the profit motive prompted their concern for investment education. Poor white children who had received financial support for education from the legislature in Antigua since 1826 also lost this funding after 1850. By now the education system which had started with so much promise was in a state of inertia.

> It became increasingly apparent that the partnership of the religious bodies and the Imperial Government would not fulfil the early ambitions to create an educational system throughout the West Indies. Despite considerable protest, particularly from the Mico Trustees who had extended their operation most, the Imperial Grant came to an end in 1845, with solemn injunctions to the West Indian Legislatures and West Indian workers to support the education of their own children. (Gordon, p. 34)

Crown Colony Period

The piece-meal efforts at educational planning and administration characterized the period of the late nineteenth and first half of the twentieth centuries. The

Education Act of 1874 and 1890 sought to make the system more effective by imposing a carbon copy of the educational efforts in Britain. "Payment by results" was introduced in 1874. This was a system whereby grants were given to schools on the basis of their showing at biannual inspections, and examinations in the three 'R's'. Education was made compulsory in 1890, but this was on paper only as there was inadequate accommodation for the small percentage of children who were attending schools. By 1914, the government of Antigua was forced to assume control of schools because the missionary bodies were unable to support them any longer.

Efforts were made to revise secondary education in 1880 in a bid to provide education for the middle class and for the needs of an expanding civil service in Antigua. Again, the church took the lead. The Wesleyans established Coke College; the Catholics, a high school; and the Anglicans, a boys' grammar school. The last was the only one to survive the doldrums of the 1890's.

The British Cambridge School Certificate Examination exerted some influence on the curriculum of these schools from the beginning. The Leeward Islands Scholarship which was instituted in 1913 for boys and in 1924 for girls, and allowed the winners to proceed to higher education overseas, was the pinacle of educational achievement. The fact that the examination papers were set and marked in Britain and bore little relevance to the West Indian context aroused no criticism, but was a matter of pride, for in colonial mentality, "what was British was best!"

As a result, two parallel systems of education grew up and served to reinforce the rigid class and colour distinctions which were the legacy of slavery--the elementary "all age" system, compulsory for children five to 14 years of age, and the grammar school system, with its infant and primary wings attached to serve those persons in the society who could pay its fees. As Veronica Evanson noted:

> Elementary education became linked in people's consciousness with poor people's education. The only scape route was via the pupil teacher system by which selected pupils were taken from the top of the elementary schools and given further instruction and training to prepare them for teaching posts in these schools. (1975, p. 62)

Novelle Richards reported that secondary education, with fees too high for rural labourers earning very low wages, was the preserve of the more affluent and for children born in wedlock. In this way, the church attempted to monitor the morals of the population. As a result, a minority of the population was exposed to the elitist education. On the other hand, the elementary schools were poorly staffed, poorly equipped and overcrowded. Absenteeism, especially in crop time, was at a high level (1967, p. 12).

Post-War Development in Education

The 1940's ushered in a new era of educational development in the Leeward Islands. Widespread poverty among the labouring classes had set in motion a series of riots which began in St. Kitts in 1935 and spread rapidly throughout the West Indies. As a result, the West India Royal Commission was appointed in 1938 to investigate social and economic conditions in all the British West Indies. The Commission took evidence from a wide cross-section of the people and presented a comprehensive report on the health, sanitation, nutrition, and education of the territories and the role these should play in the development of the colonies.

The report highlighted the 'serious inadequacies' of the education system and was almost identical in tone with the report of the Marriott-Mayhew Commission of 1931. Among other things, it criticized the dual system of control of education which militated against the formation of an educational policy 'let alone its vigorous and consistent execution.' The inadequacy of school places for the children who were then attending school, the poor quality of existing facilities, the too great reliance placed on the pupil teacher system, and the outmoded curricula were also lamented.

The educational proposals called for more systematic training of teachers, more adequate school accommodation and the reorganizing of school to allow for junior secondary schools for children between the ages of twelve to fifteen years.

The Report, published in 1945, outlined the deplorable education conditions:

> Secondary schools exist in the West Indies many of which provided an excellent classical education, but they provide for only a small proportion even of the children who pass through the primary school. As it is, unemployment is rife among the products of secondary education owing to the lack of suitable 'white collar'

> jobs and the disinclination of the pupils to take employment in agriculture as at present organized. (p. 99)

The Colonial Development and Welfare Act of 1940 provided £1 million for the West Indies. Grants and loans to Antigua from 1946 to 1957 as documented by Edris Bird, amounted to £118,000 (1980, p. 79). As a result of this financial support, the quantitative development of educational facilities became evident. In Antigua, between 1947 and 1957, the number of schools rose from 25 to 32, and between 1960 and 1965, nine new schools were built. In Antigua, Post Primary Departments were added to existing primary schools and the Princess Margaret Secondary Modern School was opened in 1955. The aim of the Secondary Modern School was to give a 'strong general education with an infusion of practical subjects' which would be more in keeping with the developmental aims of the territory and would break the stranglehold of the classical grammar school which, in the opinion of some sociologists, served mainly as anticipatory socialization for migration.

Twenty years later Evanson, in criticizing the content of the Antigua curriculum offerings in relation to education for economic development, noted the limited absorptive capacity of the civil service in relation to false aspirations of the students and blamed these on the lack of systematic training in technical and vocational education.

> It is customary for secondary school graduates, regardless of ability or inclination, to anticipate positions in the civil service or some other white collar organization, of which there

> were few. These young people could hardly be blamed for their attitudes and aspirations for they had been afforded no vocational preparation beyond the rudiments of commercial subjects and home economics taught to a limited number of girls . . . no systematic attempts were made to develop technical or vocational education, or in any way prepare youths for the world of work. (1975, p. 79)

Evanson reported that systematic training in technical and vocational studies as advocated was not sufficient. Age-old attitudes cannot be changed overnight by prescribed formulas which failed to take cognizance of the realities of the local situation.

Trade Union Struggle

The struggles of the trade unions of the 1940's throughout the Caribbean was to break the power of the plantocracy. In Antigua, the Labour Party Government which emerged as a result of the felt need for political power pledged to bring better working conditions to the masses. Workers' sentiments were expressed in these popular slogans: "Massa day done!" "We are out to break the social barrier!" "We are going to build a new Antigua!" The "new Antigua" was envisaged as a place where education would permit the masses to get those jobs which they had previously been denied and so have a better position in their society.

The Antigua Labour Party Manifesto (1965-1970) outlines their objectives:

> Our efforts have been aimed at eradicating the low standard that obtained in the past to accommodate a sugar economy and to introduce a liberal type of education that is socially

> desirable for Antigua and Barbuda, and which can break down forever the barriers of privilege and snobbery of the past and give each child the best education for which he is suited. (p. 7)

To break down forever the barriers of the privilege and snobbery of the past was the main motive in the minds of the new leaders,and this was passed on to the people. This was an intense period of raising class consciousness. These sentiments were in concert with the feelings of the people who had lived hard lives and had held visions of better lives for their children.

In 1969, an Antigua newspaper, The Workers' Voice, railed against the high fees of a private school:

> . . . These astronomical fees are directed against the masses. This policy had no bearing on colour. It is a class question and if allowed to continue . . . there is no doubt that the snobbery and class barriers that the labour movement demolished will quietly and persistently penetrate the community like a fatal cancer. (November 25, 1969, p. 2)

Expansion of Secondary Education

The government needed financial aid to arrest the situation. It was genuinely felt by the new leaders that equality of educational opportunity would be achieved by a considerable expansion of secondary education, particularly in the rural areas, and an increase in scholarships to secondary schools. By 1978, the government had made secondary education free to all who wished to benefit from it (Antigua Progressive Labour Movement Manifesto, 1978).

In 1964, the government took over two leading grant-aided secondary schools, the Antigua Grammar School and the Antigua Girls' High School (Education Report, 1965). In Antigua, secondary schools were built in rural areas. The Junior Secondary School which is organized on comprehensive lines has been embraced in Antigua; the concept of children's varying abilities has been accepted by the politicians and planners. In 1971, the Minister of Education declared in a policy statement in an Address at the Opening of the Teachers' Vocation Course:

> . . . Pupils will transfer to these central schools on reaching the age of twelve and will be required to remain at school barring unforeseen circumstances such as disability until they are sixteen years old. The emergence of the unselected comprehensive school will demand an expanded curriculum and instead of over-academic emphasis based on imported tradition, there will be a school program firmly rooted in the life of the pupils and their aspirations and realizable in the context of their environment. Such schools must of necessity have facilities for teaching science, art, music, woodwork, metalwork, domestic science, typing, shorthand, bookkeeping, principles of accounts, and where possible in rural areas, agricultural science . . . .

The Minister further explained:

> . . . Parents will have to understand that failure to gain passes at the General Certificate of Education (G.C.E.) does not mean that the child is dunçe, (sic) lazy, or even poorly taught, but that his or her child may be numbered among the 80% of the population who find academic learning difficult. A large proportion of this 80% will have to be directed to the vocational side of the curriculum in preparation for the beginning of training which we hope will result in their being skilled craftsmen and technicians--levels of activity so vitally needed in our State. (Typewritten, 1971)

The result of all this seemingly intense activity has been minimal and almost self-defeating because a number of important elements have been omitted from the plans. For example, clearly defined goals for secondary education and an understanding on the part of all who were involved with the educational process--politicians, administrators, teachers and parents--were not spelt out. Secondly, adequate funding to develop proper programs in vocational education was not within the government's financial means.

Consequently, there has been little support of these educational plans. Despite the talk of parity of esteem, the politicians and education administrators have paid more attention to academic wings of secondary schools. Princess Margaret School, one of the new schools, soon developed advanced level classes for the General Certificate in Education.

Present-Day Efforts at Restructuring Education

Colonial policy in the 1950's prepared the colonies for self-government. The modern secondary schools were to ally with the improvement of the productive resources of the country. The ideas of educators such as Margaret Mead were popular. She advocated the interdependence of education and economic development:

> An education system . . . must train future citizens to assist in the production of greater wealth for the territory in order to finance social services and therefore it must be closely related to the plans for economic development. (1955, p. 26)

These goals for education were conceived by a few individuals who did not communicate effectively with the political leaders, educational administrators, or the masses.

The 80 percent (referred to in the speech by the Minister of Education) who were drafted into vocational and training programs had high failure rates. In a study of the low percentage of passes at the Cambridge General Certificate Examinations, a government report describes the Antigua scene:

> . . . Despite all this plan, energy and skill, the island has . . . by comparison with others in the Lesser Antilles, suffered more setbacks, encountered more problems, generated more bottlenecks, and produced less satisfactory results than any of its neighbours in the Eastern Caribbean. The level of attainment in literacy and numeracy at the end of the primary course is a cause for concern . . . on all fronts their resources are too widely spread and the inadequacies of the government system have encouraged the proliferation of even less adequate private school. (Great Britain: Report to the Governor of Antigua on Education, British Overseas Development Division, 1972, p. 1)

Apprenticeship Training Schemes

In 1954, the Antigua government established an Industrial Training Committee. This committee instituted a system of apprenticeship training. Courses were offered in carpentry, electricity, masonry, motor-car maintenance, welding, rigging and hotel trades. This training has continued in government schools and in private mechanical workshops, and more recently with foreign-owned companies, such as West Indies Oil Company Limited and Cable and Wireless

(Antigua) Limited. A large number of promising trainees have received scholarships to further their training under the Canadian Technical Aid Scheme and company training schemes in Canada, the United Kingdom and the University of the West Indies (Annual Report of the Labour Department, 1965, p. 5).

The Antigua Technical College which was established in 1972 soon absorbed the Antigua Hotel and Catering School. In 1976-77, there were 88 first year and 49 second year full-time students. Courses were offered in basic hotel and catering, carpentry, masonry, plumbing, motor mechanics, basic engineering, electrical installation, refrigeration and commercial studies.

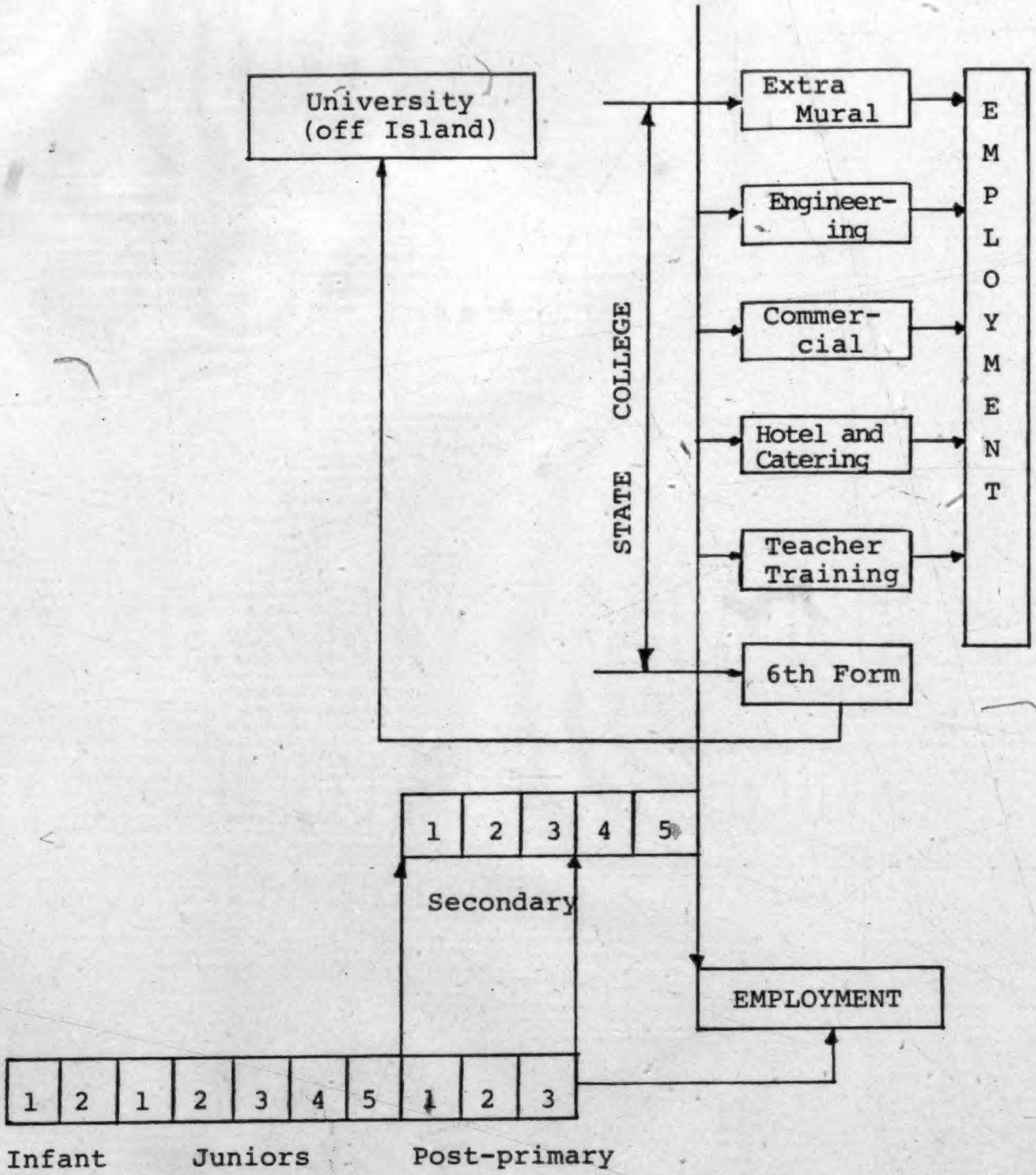
State College

Plans for a state college in Antigua were implemented in 1977 when the teacher training college and technical college were merged. In 1979, the sixth form was added and the State College was instituted.

The Structure of Education

The educational system of Antigua is illustrated in Figure 2. Educational facilities in Antigua are provided in public and private institutions. Formal education may begin at four years of age, but this type of education, termed infant, nursery, pre-primary or early childhood education, is usually offered only in private schools.

Figure 2. Antigua's Education System - Structure and Flow


University (off Island)
Extra Mural
Engineering
Commercial
Hotel and Catering
Teacher Training
6th Form
STATE COLLEGE
EMPLOYMENT
1
2
3
4
5
Secondary
EMPLOYMENT
1
2
1
2
3
4
5
1
2
3
Infant
Juniors
Post-primary

Source: Ministry of Education, 1978

Primary Education

Primary education begins at the age of five years and continues through to 12 years. It covers Grades I and II and Juniors I to V. The majority of institutions offering this type of education are public primary schools although there are a number of private primary schools where children of 'well-to-do' parents attend.

At 11 years and over, children from primary schools, all age schools, and preparatory schools are selected on the basis of their performance to write the Government Common Entrance Examination for entry to Government Secondary Schools.

Post-Primary Education

Those children who do not qualify to enter a secondary school, and children of 12 years of age who are enrolled in Primary School go automatically to the Senior Department of the All-Age Schools. The education of these children begins at the age of 12 years and is commonly referred to as Post Primary education. It is technically a cycle of secondary education, and continues until the age of 16 years. At Senior III, children are permitted to write the Government Post Primary School Leaving Examination. Successful students within the age range of 15 to 16 years are awarded scholarships for two years in Government Comprehensive Schools.

Secondary Education

Secondary education is offered in Grammar Schools and Comprehensive Schools (Forms I - V, Grades 7 - 11). At the Grammar School, the curriculum is academic. At the Comprehensive School, the curriculum reflects both academic and technical pursuits. Children in these schools begin their studies at 11 years of age and over, if they pass the Common Entrance Examination. At the completion of Form V, the G.C.E. Examination is taken. Passes at the G.C.E. are significant because of the guarantee of white collar jobs and social mobility. The Caribbean Examination Council (CXC) is now offering examinations at this level.

Higher Education

Higher or further education is offered at the State College or outside the state. The State College has three departments:

1. The Sixth Form, which is an extension of secondary education. At the end of the 6th Form (Grade 13), students sit the G.C.E. Examination at the Advanced Level for entry to the University of the West Indies (U.W.I.) or higher education elsewhere.
2. The Technical Department, which comprises three areas of studies: (a) Hotel and Catering; (b) Commercial Studies; and (c) Engineering Division. The minimum age requirement for admission to the Technical Department is 16 years. The majority of students in this department are

school leavers from the Post Primary Section of the All Age School, and under-achievers from the Secondary School. This department prepares students for: (a) The College Diploma; (b) The London Chamber of Commerce Certificate; (c) The Royal Society Certificate; and (d) City and Guilds of London Certificate. The twelve courses are generally offered over two years.

3. Teacher Training: This department provides professional training of teachers for service in the State's schools. A two-year program is offered in association with the School of Education of the University of the West Indies.

Post-Secondary Education (External)

This is offered at the University of the West Indies at: (a) The Mona Campus - Jamaica; (b) The St. Augustine Campus - Trinidad; (c) The Cave Hill Campus - Barbados; and (d) The University Center - Antigua. Passes in two to three subjects at the Advanced Level is the normal entry requirement to the University of the West Indies. The U.W.I. is a regional institution with the main campus located at Mona in Jamaica.

Educational Administration

Formal education in Antigua is directly under the control of the Ministry of Education. The Minister of Education, a member of parliament, is responsible to the Cabinet of Antigua for all matters pertaining to education in the

State. Figure 3 shows a section of the organizational chart. The Antigua Education Act of 1972 outlines these responsibilities for the Minister:

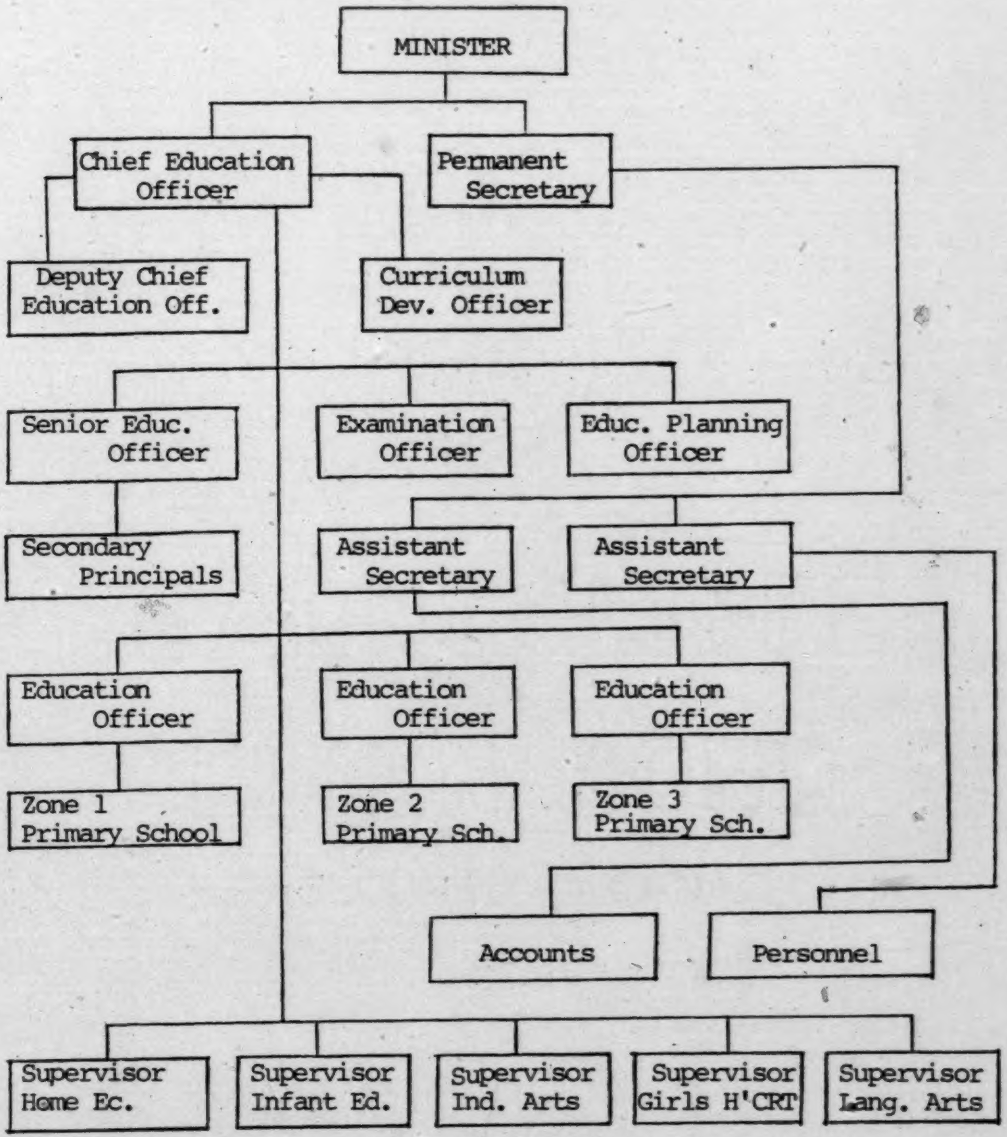
> 1. . . . devising a system of education calculated as far as possible to ensure that the educational and vocational abilities, aptitudes and interests of the children find adequate expression and opportunity for development.
> 2. . . . to establish a system of education designed to provide adequately for the planning and development of an education service relating to the changing needs of the community.
> 3. . . . conducting, establishing, managing, maintaining and assisting schools in accordance with regulations to be made by him from time to time. (pp. 2-3)

Appointments to the staff of the ministry are civil service appointments. The permanent secretary who is a senior civil servant is the executive head of the ministry. The ministry is organized into different administrative divisions: (a) Personnel; (b) Finance and Accounts; (c) Education; (d) Community Development; (e) Planning and Maintenance; (f) Examinations; and (g) Sports.

There is a Chief Education Officer who is responsible for the overall machinery dealing with the supervision of schools. To assist him in carrying out the duties of the ministry are education officers and supervisors. These officers are responsible for different aspects of the school and the curriculum.

The role of the Education Officers is that of liaison between educational institutions and the ministry. Their responsibilities include:

Figure 3. A section of the Ministry of Education Organization Structure.


MINISTER
Chief Education Officer
Permanent Secretary
Deputy Chief Education Off.
Curriculum Dev. Officer
Senior Educ. Officer
Examination Officer
Educ. Planning Officer
Secondary Principals
Assistant Secretary
Assistant Secretary
Education Officer
Education Officer
Education Officer
Zone 1 Primary School
Zone 2 Primary Sch.
Zone 3 Primary Sch.
Accounts
Personnel
Supervisor Home Ec.
Supervisor Infant Ed.
Supervisor Ind. Arts
Supervisor Girls H'CRT
Supervisor Lang. Arts

Source: Ministry of Education, 1978.

(a) The supervision, inspection and revision of the program of education required by the curriculum;
(b) The ensurance that school premises, property and stock are protected against improper use;
(c) The submission of reports on matters relating to the discipline of teachers;
(d) The conduct and supervision of courses of induction and training for untrained teachers as well as courses for other teachers;
(e) The observance of the provisions of the Education Act and any regulations made pertaining to the conduct of schools;
(f) The consideration and assessment of the confidential reports of teachers; and
(g) The ability to furnish such returns as may be prescribed or required at any time by the Chief Education Officer. (Education Act, p. 6)

Review of Literature on Evaluative Studies in Industrial Arts

In order to develop a theoretical framework for this study, a library research of the standard indices for reporting research was reviewed to determine if studies have been conducted on the evaluation of industrial arts programs. This review revealed that several similar evaluative studies were completed and have implications for this particular study.

The research study completed by Alsip (1965) evaluated the industrial arts programs in the public schools of the State of Louisiana. The data collection instrument designed by Alsip was evaluated by a panel of 34 outstanding industrial arts educators. The instrument was mailed to 171 selected junior and senior high school industrial arts teachers in Louisiana. Alsip reported his findings:

> In general, industrial arts programs in the junior high school, both large and small, were meeting the standard as measured by the evaluative instrument in the three aspects of the program. These were nature of offerings, objectives, and standards of staff and instruction. Several deficiencies existed in each of the following phases of the program: organization; areas of industrial arts; and physical facilities. (p. 103)

Stangl's (1968) doctoral thesis developed evaluative criteria for evaluating secondary school industrial arts programs. Stangl's variables for his evaluative criteria were curriculum, physical facilities, and teacher preparation. The criteria statements that Stangl designed were rated by secondary school principals and industrial arts teachers in New Mexico, and were trial tested in selected schools in Colorado. Stangl found that:

> Some periodic means of examining secondary industrial arts was needed to inform teachers, administrators, and state educational officials of the inadequacies which may exist in their schools' programs and the appropriate steps which might be required to eliminate such deficiencies. (pp. 21, 170)

Stangl recommended that a national industrial arts group assume the responsibility to determine the feasibility for evaluating secondary industrial arts programs on a national-wide basis.

> Since criteria were developed and validated in one State and this validity was confirmed in another, interested industrial arts groups could assume the initiative and determine if a national wide criteria of this type is feasible for evaluating secondary industrial arts program. (pp. 21, 183)

Wright (1970) in a study on junior high students in Alberta found that student achievement was low, and the desired outcomes were not at a level acceptable to either a standards committee or the industrial arts instructors. The specific weaknesses in the planned curriculum for industrial arts in Alberta were:

> 1. The intent of the curriculum planners as stated in the curriculum guide was subject to misinterpretation by the industrial arts teachers, especially with regards to essential distinctions, the emphasis to be given various activities, and the orientation of the study.
> 2. The concepts listed in the curriculum guide are not sufficiently clear to enable the industrial arts teacher to direct his student to a full understanding of the graphic activities.
> 3. The curriculum guide failed to outline specific teaching procedures which the judges felt necessary to ensure the desired level of student achievement.
> 4. Because of low performance and participation level as well as a lack of time, the concepts presented in the guide were unrealistically difficult.
> 5. The validity of the present methods of measuring students' understanding of the various concepts listed in the curriculum guide must be questioned. (pp. 39-40)

Vilaiprom (1971) did an evaluation study of the industrial arts program in thirteen comprehensive schools in Thailand. To collect data for his study, Vilaiprom used a modified version of Section D-11, Industrial Arts of the Evaluative Criteria, 1960 Edition, published by the National Study for Secondary School Evaluation.

Vilaiprom reported the following:

1. The members of the evaluating committees were generally satisfied with the organization of the industrial arts programs.

2. That the stated objectives of the industrial arts program were being met in the nature of offering with eleven of the seventeen items presented, rated above average or excellent.
3. Deficiencies in physical facilities were found in three broad areas: (a) the physical layout of the shop; (b) the utilities provided in the shop; and (c) the equipment provided in the shop.
4. In the direction of learning, the industrial arts program was not meeting its stated objectives as measured by the evaluative instrument: (a) although seven of the twelve statements listed for evaluating instructional staff were rated above average or excellent, several deficiencies were found in this area; (b) instructional activities were found to be deficient in two broad general areas of class activities and supporting instructional hardware; (c) industrial arts teachers in most of the Comprehensive Schools were found to be seriously in need of all types of instructional materials; (d) seven of the thirteen evaluative committees questioned the validity and reliability of the present method of student evaluation. These committees felt that instruments were needed to enable industrial arts teachers to evaluate leadership development, responsibility, problem solving ability, and attitudes towards safety.
5. In the area of outcomes, it was found that students were not acquiring the ability to select, care for and use industrial products intelligently, or to appreciate good design and construction. The evaluators felt it to be a serious short-coming of their programs that students did not develop an understanding of the properties and uses of raw materials used in the workshop. (pp. 128-136)

Aird (1972) conducted an evaluation of the industrial arts program offered in the primary schools of Grenada. Aird also used a modified version of Section D-11, Industrial Arts of the Evaluative Criteria, 1960 Edition, to collect data for his study. His findings were as follows:

1. The organization of industrial arts in Grenada was considered satisfactory by the participants, but the major concern of

eleven of the twelve participants was financial support for the program.

2. The stated objectives of the industrial arts program were being met in the nature of the offerings with fourteen of the seventeen items presented rated as satisfactory.
3. The physical facilities for industrial arts were considered satisfactory by the participants. While five items of the forty items checklist were considered inapplicable, of the remaining thirty-five items, twenty four were considered unsatisfactory.
4. In the area of direction of learning: (a) instructional staff was evaluated by the participants as generally satisfactory; (b) instructional activities were also rated as satisfactory; (c) instructional materials as measured by the evaluative instrument were satisfactory. Only three items of the ten items checklist dealing with instructional materials were rated as satisfactory by the participants; and (d) methods of evaluation were also rated as satisfactory by the participants.
5. In the area of outcomes, it was not possible to draw a conclusion. Four of the ten items in the general evaluation were rated as satisfactory. Another two items were rated unsatisfactory, while the rating on the remaining four items were inconclusive. (pp. 89-92)

In 1978, Thompson conducted an evaluation of the industrial arts program in the government secondary schools in Guyana. Thompson used a modified version of Section 4-10, Industrial Arts of the Evaluative Criteria, fourth edition, published by the National Study of Secondary School Evaluation to collect data for his study. His findings were:

1. The organization of industrial arts in Guyana was considered satisfactory by the participants. They were, however, dissatisfied with the size of classes and the length of class periods. They also felt that the grant provided by the government for industrial arts was grossly inadequate. There was also need for the expansion of the scope of industrial

arts. Only Technical Drawing, Woodwork and Metalwork were considered as regular course offerings in the secondary schools.

2. The stated objectives of the industrial arts program were not being met in the nature of the offerings. The participants felt that the content of the industrial arts program did not provide significant group activities and projects that involved problem solving situations. Members felt that the program did not provide students with exploratory experiences in a variety of tools, materials and industrial processes.
3. The physical facilities for industrial arts were considered unsatisfactory by the participants. They were unhappy with the quantity and variety of tools, instruments and equipment provided; the health and safety measures in their industrial arts facilities; the floor space provided, and the layout of machinery. The absence of display cases, storage cupboards and bulletin boards were also areas of dissatisfaction.
4. In the area of direction of learning: (a) instructional staff was evaluated as unsatisfactory. The participants were dissatisfied with the qualification of the industrial arts teachers in their respective schools; (b) Instructional activities were considered unsatisfactory. Participants were not satisfied that there were adequate provisions in the industrial arts program to cater for individual differences and the needs of students. It was felt that planning and preparation for instructional activities were inadequate and thus students' needs for leisure-time activities were not being met; (c) instructional materials were also considered unsatisfactory. There was need for textbooks, reference materials, and a variety of instructional resources in industrial arts. There was an urgent need for more programmed or individualized instructional materials in all the subject areas; and (d) methods of evaluation were considered as undesirable by participants. The committee members did not feel that the evaluation instrument or the evaluation procedures were either appropriate or satisfactory.
5. The outcomes of industrial arts were unsatisfactory. The members of the self-evaluation committees were less than satisfied that: the content of the industrial arts

> program helped the students to understand and appreciate labour-management problems; students developed or discovered any interest, aptitude and abilities; students developed any appreciation for good design, construction and craftmanship; students possessed any information about the various industrial occupations and industries; and students possessed any knowledge and understanding of the properties and uses of important raw materials. (pp. 165-178)

The literature has shown that in all cases, the industrial arts programs needed improvement in several areas. A summary of the areas that need improvement are: physical facilities; instructional materials; financial support; direction of industrial arts; and the outcomes of industrial arts.

Except for the Guyana evaluation study, the others were limited because there was no student participation. The Guyana study had only one student participant on the evaluation committee, but this study will provide for two student participants. As a product of any instructional program, students have as much to contribute in any evaluative procedure as instructors, administrators and lay people.

The student is in a unique position of being a "constant customer" in the school program. The student rating of such a program is essential and valid. Harvey and Baker discuss the value of students' assessment:

> Any type of teacher evaluation by the student is subjective by its very nature because all teaching is in essence an interplay between the teacher and his clientele and the students are necessarily involved personally in the activity to observe and evaluate . . . . There is little empirical evidence that the more elaborate and sophisticated teacher rating

> instruments are more valid estimators of teacher effectiveness than are gross subjective judgments of students. (1970, p. 275)

The view that students have no right to judge how good a school program is because they have limited knowledge and a bias has been challenged by the concept of academic freedom which includes students in the program's improvement. Keuren and Lease stress the role of the students' evaluation.

> Student evaluation of a program is a reflection of their value towards the educational program as they indicate that students are not willing but eager to express their conviction; moreover, their work was characterized by sincerity and by a genuine sensitiveness of real value. (1965, p. 3)

There are two guidelines for selecting the students to participate in this evaluation:

1. The selection can be from past industrial arts students who successfully completed the program; or
2. Senior students who were actively pursuing industrial arts courses with a minimum of two years' experience in the field.

Program Evaluation

Evaluation models were first conceived and used by the military; later by government, business, and industry; and during the last twenty years, by educational institutions. Various models for the evaluation of the many aspects of education have since been developed. According to James D. Finn (1973), program evaluation identifies five general purposes. These are:

1. To add to the substantial knowledge of educational processes;
2. To provide information in order to adjust, discard or otherwise change the application of an ongoing educational process;
3. To provide justification for a political-social-economic action relating to education;
4. To create a production (usually paper) which can move through the educational bureaucratic system and thus keep these systems operative; and
5. To provide instruments which may be used to carry information on the success of the process to the educational community.

Without such information, decisions to revise, and particularly decisions on how to revise, must be based on feelings and individual preferences. The evaluation process is undertaken to provide data on new developments, in order that these new data may be diffused throughout the educational community so that schools may understand and take advantage of the findings (pp. 10,13).

Evaluation Defined

The term 'evaluation', despite its widespread popularity, may often be poorly defined or improperly used. It is not uncommon for the meaning of evaluation to be taken for granted thus resulting in confusion when two or more individuals using the term fail to understand one another. The following are some concepts put forward by various writers and serve the purpose of this study.

Bloom (1971) suggests that the major purpose of evaluation is the upgrading and classifying of students. However, evaluation should have a much broader place in education and should be primarily used to improve teaching and learning. Evaluation encompasses:

> 1. A method of acquiring and processing the evidence needed to improve the students' learning and teaching;
> 2. A great variety of evidence beyond the usual final paper and pencil examination;
> 3. An aid in classifying the significant goals and objectives of education and as a process for determining the extent to which students are developing in these desired ways;
> 4. A system of quality control in which it may be determined at each step in the teaching learning process, whether the process is effective or not, and if not, what changes must be made to ensure its effectiveness before it is too late; and
> 5. As a tool in education practice for ascertaining whether alternative procedures are equally effective or not, in achieving a set of educational ends. (Handbook on Formative and Summative Evaluation of Students Learning, pp. 7-8)

Evaluation is a systematic collection of evidence to determine whether in fact certain changes are taking place in the learner as well as to determine the amount or degree of change in individual students. In order that evaluation can take place, educational objectives must be established and defined. Those objectives must be selected which are likely to give the students maximum flexibility in making a great variety of possible life decisions. The questions of possible and desirable changes in the learner must be addressed. With these goals in mind, the teacher must then consciously make his selection of materials, teaching procedures, and instructional strategies. Because the teacher must deal with particular groups and individual learners, he must find ways of modifying the curriculum specifications of others to suit the local condition he faces. One may hope also that the individual teacher will find ways of going beyond such curriculum specifications, to include objectives and procedures which are in some ways an advancement over what others have been able to do.

Evaluation Models

Eva L. Baker, the Director of the Center for the Study of Evaluation (C.S.E.), University of California in Los Angeles, is an advocate of the C.S.E. model of evaluation. This model claims to be different from most models which outline *how* evaluation should be conducted in that it focuses primarily on *when* to evaluate. According to Eva Baker, ". . . program evaluation is the process of selecting, collecting and interpreting information for the purpose of keeping various audiences informed about a program. Usually these audiences will use the information to make decisions" (Cassette tape, American Educational Research Association (A.E.R.A.), 1980).

In program evaluation using the C.S.E. model, four stages are involved:

1. The first stage is seen as one of 'needs assessment' where goals are established for the program.

2. The second stage is one of 'program planning' and should consider at this stage plans for evaluation of the program.
3. The third stage involves 'formative evaluation' which is intended to provide recommendations for changes with a view of improving the program and this requires the involvement of the evaluator.
4. The fourth stage is 'summative evaluation' which should not be entered into until the program has had a chance to operate for a while. This aspect looks at the overall value of the program and its total impact.

Daniel Stufflebeam (1971) gives a simple, but lucid concept of the overall objective of program evaluation.

> The purpose of evaluation is not to prove, but to improve . . . . Evaluation is about and for people and its aim is to provide better schooling for their children and their fellow human being. (Cassette tape, A.E.R.A.)

One of the founders of education evaluation is Ralph W. Tyler (1942). He developed the curriculum to ascertain student progress. Since that time, evaluation has evolved as a process or operation in which the quality of an evaluation enterprise is judged. Popham (1972) defines evaluation as ". . . appraising the worth of an educational undertaking such as a curriculum, a course of studies, or a particular instructional procedure" (p. 1).

Michael Scriven also considers the process of evaluation as the ". . . act of assessing merit" (cited Popham, 1972, p. 1). Walberg (1974) concurs with these definitions, noting that evaluation must focus not only on student outcomes or results, but on the quality of the educational environment that is thought likely to promote such results (p. 2).

Evaluation then becomes a process (Tyler, 1942), a way of discovering how far the experiences of a group, be they students or teachers, have developed and whether they are producing the desired results, i.e. behavior change, based upon stated goals and objectives. Many evaluation models have developed over the years, each with a key emphasis, key activities, and stated purpose in mind. However, all revolve around the central theme, that of evaluating curricula in order that the process of education can be maximized in terms of student progress, procedures of instruction, and the facilitation of rational decision making within the many internal and external constraints placed on education.

Popham's model will be described fully for the purpose of this study.

The Popham Model

This model is founded on the process and effectiveness of educational innovations or a goal-oriented perspective. Coupled with this is what is described as treatment adequacy assessments or program planning. In order that the evaluative process be carried out, two other components are added--a formative evaluation or collection of relevant data during the process of the program and a summative evaluation or an evaluation through the collection of data to determine the overall value or total impact of the program.

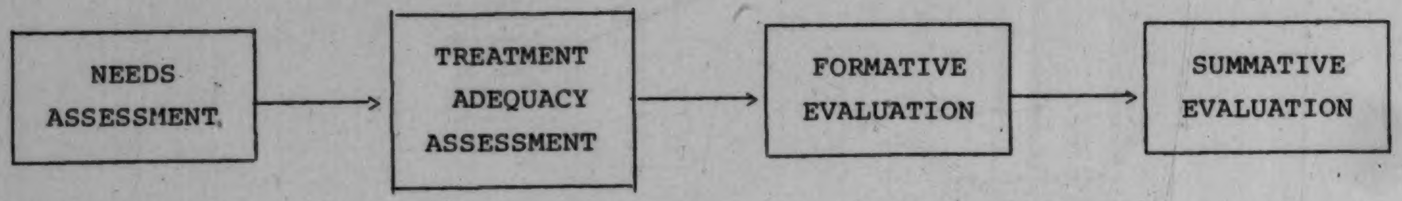
The Popham model is often depicted as being the same as that of the Center for the Study of Evaluation (C.S.E.) and is described as lacking in prescriptiveness as to how an evaluation should be carried out, hence it becomes difficult to place or pigeon-hole within a table of prototype evaluation models as has been done in the case of the Tyler Model, or the Scriven Model and the Sufflebeam-CIPP Model (Fitz-Gibbon, 1978, VI, p. 7). The Popham or C.S.E. Model is, as Fitz-Gibbon points out, a focus not on how to evaluate but rather when to evaluate, when various audiences might be able to use credible information during the various phases of program development. Based upon this, it becomes not a model but a process utilization, that which Popham feels is most appropriate for the evaluation. Figure 4 illustrates the stages of Popham's evaluation process.

Needs Assessment

Popham defines needs assessment as ". . . an operation where the educator attempts to identify the goals towards which an education system ought to be directed" (1972, p. 3).

In the first phase of Popham's process of evaluation, goals are established. Program goals and objectives are in fact often very elusive in that they have not been identified in a written form from the inception of the program, or at the opposite end of the continuum, have been identified but have become outdated because of a change in one direction of the given program. Dependent upon the desired

Figure 4. Stages of the Popham Evaluation Process


NEEDS ASSESSMENT
TREATMENT ADEQUACY ASSESSMENT
FORMATIVE EVALUATION
SUMMATIVE EVALUATION

outcome, and the type of program, goals are made informally. This makes the evaluator's task more difficult in that he must now determine the perceived goals and verify them through question-and-answer techniques. Tyler (1942) discusses the significances in defining goals:

> It is absolutely essential that the goals and objectives be defined in order to make an evaluation since unless there is some clear conception of the sort of behavior implied by the objectives, one has no way of telling what kind of behavior to look for in the students in order to see to what degree the objectives are being realized. (p. 72)

A problem arises if intended goals are verbalized. The evaluation client can take present student performance as the indicator and unwittingly reverse the goals to suit the performance.

Another function of the evaluator during this need assessment phase is to determine the actual need for the program. This is usually done by testing and survey.

Treatment Adequacy Assessment

This phase of the evaluation technique has been defined as ". . . determining the quality of educational means which were designed to accomplish the ends originally decided on through need assessment" (p. 4).

According to Popham, the phase of adequacy assessment is generally considered an "evaluation." Adequacy assessment does not constitute a true phase as did the needs assessment. What it does provide, however, is a basis upon which a formative evaluation is designed. Popham suggests a number of questions or concerns that should be raised by the evaluator at this time, such as:

1. What research considerations, if any, are involved in the evaluations of educational treatments?
2. How should instructional treatments be improved as a consequence of performance data?
3. What kinds of test measurements should be used to assess learner growth?
4. How many students should be measured to provide an adequate estimate of their accomplishments?
5. How should performance be analyzed for evaluation studies?
6. How should performance data be reported in evaluation studies?

Formative Evaluation

In the Popham process, the formative evaluation phase is based upon the questions asked by the evaluator in the treatment adequacy assessment phase. Popham defines the formative evaluation phase (first introduced by Scriven) as:

> . . . to improve the treatment as it is being developed . . . the contrasting of learner performance data with the standards of acceptability in the hope of modifying the treatment so it can do a better job. (p. 5)

The formative evaluation stage is generally carried out by an evaluator who is part of the program. The program staff use the data to make program revisions (Fitz-Gibbon, 1978, V-3, p. 17). At this stage the formative evaluator will gather data relevant to differences of opinion on the design and implementation of the program. In order to offset the challenges, pilot projects are carried out to catch any errors which may have been designed into this phase of the program. According to Popham:

> . . . to supply performance data for treatment improvement, the evaluator needs to employ fine grained measurement, not just a device which yields a yes-no decision on whether objectives were achieved. (1972, p. 59)

Summative Evaluation

The final phase of the Popham process is the summative evaluation, a term borrowed from Scriven. The definition for this phase is:

> . . . to compare the treatment competitors . . . used when one wishes to reach a decision as to the adaption of a particular instruction treatment or, perhaps, regarding the continued use of the treatment. (p. 5)

A summative evaluation is a summing up of a particular educational program, one carried out after the fact by an external evaluator who is in a position to determine whether or not to expand the program, to continue the program, or to recommend that the program be used elsewhere. The summative evaluation represents the interests of the sponsor and the broader community (1978, V-1, p. 9).

The preceding represents a description of the Popham or C.S.E. process of evaluation procedure. It is based on Tyler's model with the emphasis on instructional objectives and the measurement of student progress towards those objectives. The treatment adequacy assessment phase minimizes the risk of oversimplifying aims and ignoring processes. The formative and summative procedures of evaluation are taken from the Scriven model of Goal-Free Evaluation. While it does represent a number of inherent problems in the summative stage of the overall procedure, it does allow a freedom of design unlike more prescriptive models.

Summary

The review of the literature concerning evaluative studies of industrial arts program indicated a number of areas of major concern in evaluating an industrial arts program:

1. Organization of industrial arts instruction;
2. Nature of industrial arts offerings;
3. Adequacy of physical facilties for instruction;
4. Direction of learning in industrial arts;
5. Outcomes of industrial arts instruction; and
6. Special characteristics of industrial arts program.

These major areas of concern suggested the specific objectives of the study.

The review of the literature concerning evaluation in general suggested that evaluation of educational programs can be successfully performed by using self-evaluating committees comprised of teachers and students. This process of self-evaluating was used to collect relevant data for the study.

Finally, the review of the literature on the economy, history, and administration of education in Antigua provided a background and perspective for the evaluation of the industrial arts program in the schools of Antigua.

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CHAPTER III

METHODOLOGY

In Chapter II, the background to this study was developed. This chapter presents the methodology used to conduct the study and gather the necessary data for analysis.

Criteria Used to Select Participating Schools

All the government schools in Antigua, which met the following criteria, were selected for participation in this study:

1. Each participating government school had to be equipped with industrial arts facilities as defined in Chapter I (see p. 7);
2. Each participating school selected--primary and secondary--had to satisfy the definitions as defined in Chapter I (pp. 7,8);
3. The industrial arts facilities in each participating school had to be in use for instruction in industrial arts at the time of the study.

In addition, the following guidelines were established to select the student representatives on the Self-Evaluation Committee:

1. Student participants can be past students of the school or senior students currently enrolled in industrial arts courses;
2. Past students should have followed courses in industrial arts during their last three years in school; and
3. Present students should be in the senior forms, and currently pursuing industrial arts courses, and have not less than two years of industrial arts experience.

Population

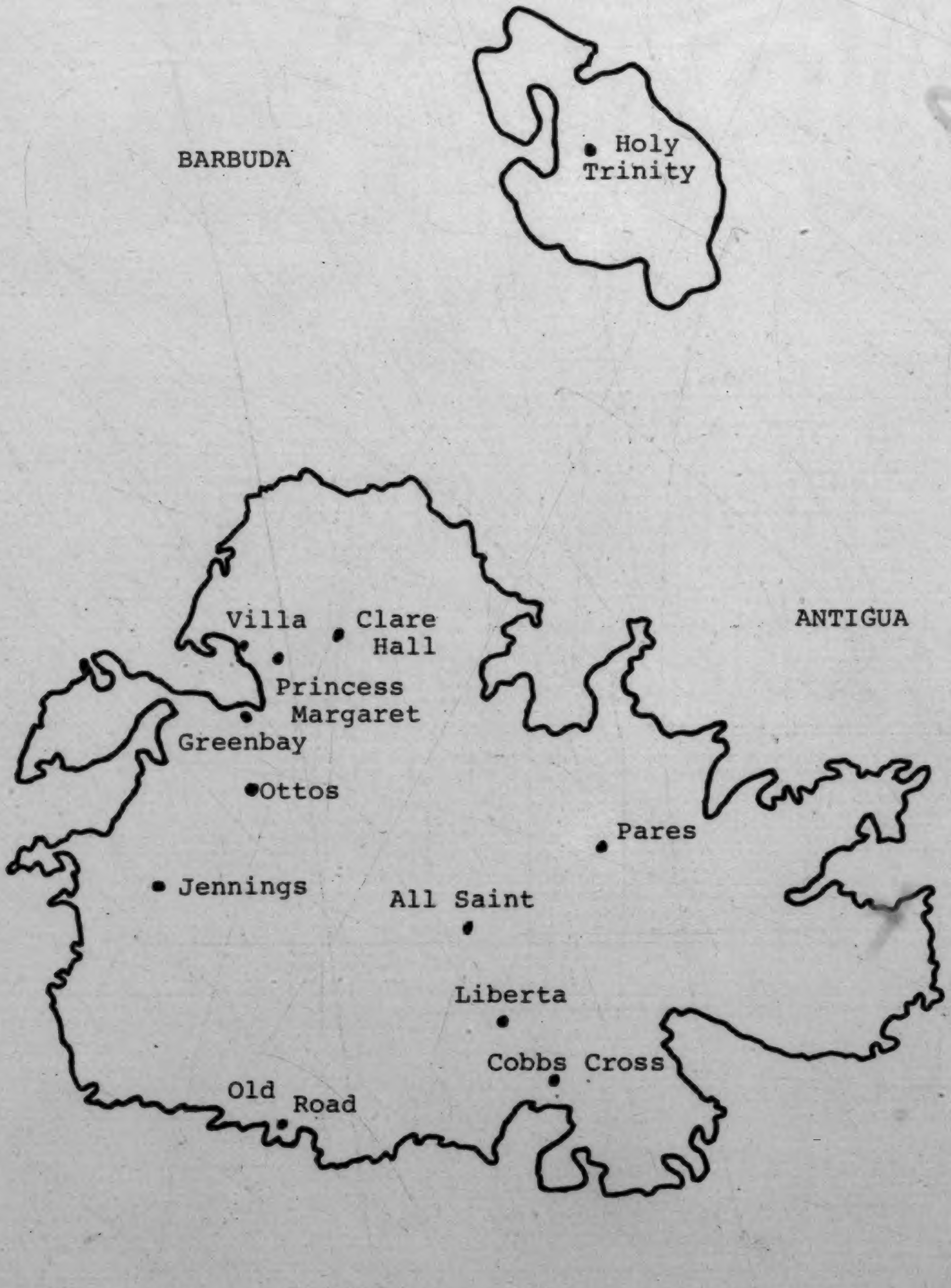
The population for this study consisted of 12 government schools--seven secondary and five primary--which met the criteria established for the selection of participating schools. The names and locations of these schools are given on the map presented as Figure 5. In each school, a Self-Evaluation Committee was established. The members of this committee included the school principal, the industrial arts teachers and two student representatives who were either past or present students.

Research Instrument

The instrument used for this evaluation was a modified version of Section 4-10, Industrial Arts, of the Evaluative Criteria, 5th Edition. The following reasons prompted the selection of Evaluative Criteria.

Figure 5

Map of Antigua Showing Location of Participating Schools


BARBUDA
Holy Trinity
ANTIGUA
Villa
Clare Hall
Princess Margaret
Greenbay
Ottos
Pares
Jennings
All Saint
Liberta
Cobbs Cross
Old Road

Reliability

Evaluative Criteria of the National Study of Secondary School Evaluation was first published and used in 1940. Since that time it had been used by thousands of schools throughout the United States and schools around the world. The earlier revisions of these criteria were made and published in 1950 and again in 1960. Recent revisions were carried out in 1968 and again in 1978, when the fifth edition was released. In the fifth edition (1978) the authors reported:

> As was done in 1940-45 and 1950-58, the study made extensive effort from 1960-68 and again in 1970-78 to obtain criticism and suggestions from users of the materials. In addition to suggestions returned in writing, the Director of Revision visited general meetings and workshops of the accrediting associations and also individual schools in order to discuss problems, sensitive areas and suggestions. (1978, p. 5)

Several hundred people throughout the United States participated and helped to develop "an up-to-date improved instrument" (p. 5).

Validity

The validity of Evaluative Criteria was secured from its extensive use around the world and the frequent revisions of the instrument by "specialists" and "generalists" of different interest and experience over the years. The provision for users to modify the instrument and eliminating irrelevant ones served to extend the validity of the instrument for the evaluation of the industrial arts program in Antigua. The evaluation of all kinds of programs was now an important characteristic of contemporary educational practice. The self-evaluation, as a technique in survey research, was one way of identifying clues of our entire system of education in order to provide school personnel and educational authorities in studying their ongoing programs with the view of improving them. The self-evaluation technique supported the recommendation that the best procedure for evaluating a program was to carry out a self-evaluation using Evaluative Criteria and to have this self-evaluation checked by administrators, teachers and students (p. 5).

Modifications and Organization of Instrument

Minor changes were introduced to adapt the instrument to the Antigua and Caribbean setting. The changes were as follows. Item statements were rewritten and presented as questions. This would allow the participants to use the criteria established for rating, instead of the temptation of responding "yes" or "no" to a statement. Bearing in mind that the Antigua industrial arts program was not as fully developed as some programs in North America, the researcher introduced the rating ND--"Missing but Needed"—to help participants with the overall evaluation of the industrial arts program. All words, phrases, and sentences that were not peculiar to the Antigua and Caribbean context were changed accordingly.

The research instrument for this study had six major sections and each section was sub-divided into three subsections comprising of: (a) checklist items; (b) general evaluation items; and (c) comments.

The major sections and subsections of the instrument included:

1. Organization (16 item statements), evaluations (3 item statements);
2. Nature of offerings (17 item statements), evaluations (5 item statements);
3. Physical facilities (38 item statements), evaluations (5 item statements);
4. Direction of Learning: (a) instructional staff (12 item statements), evaluations (5 item statements); (b) instructional activities (19 item statements), evaluations (3 item statements); (c) instructional materials (8 item statements), evaluations (3 item statements); (d) method of evaluation (12 item statements), evaluations (4 item statements);
5. Outcomes (10 item statements); and
6. Special characteristics of industrial arts (5 item statements).

In addition to the item statements and the evaluation statements, provision was made for members of the self-evaluating committees to include comments on their industrial arts program. The ratings, evaluations, and comments of the respondents to this evaluation will be presented in

Chapter IV of this report.

Use of Research Instrument

Each section of the research instrument consists of items which are found in an effective industrial arts program. For each item it was possible for the members of the evaluation committee to make a judgment, and rate the industrial arts program in their school, taking into consideration the school's philosophy, the program's goals and objectives, and the needs of the students and of society. In rating the program, the chairperson of the evaluation committee was asked to circle the number corresponding to their judgment on each item of the four point scale. A rating of 4 represented the Upper Extreme of the scale and indicated Excellent, and 1, representing the Lower Extreme, indicated Poor, with 2 and 3 representing Fair and Good, respectively.

If a provision did not exist in an industrial arts program, but was believed to be Needed, the respondents were instructed to circle the ND--"Missing but Needed"--rating. On the other hand, if the provision was neither applicable nor desirable, the respondents were to circle NA--"Neither Applicable nor Desirable"--rating.

Each section of the research instrument was provided with a space for the comments of the respondents. These comments were intended to highlight deficiencies in the industrial arts program, and to suggest possible solutions for correcting these deficiencies so that the program could better meet its stated objectives.

Collection of Data

Permission to use Section 4-10 of Evaluative Criteria was granted by the Executive Secretary of the National Study of Secondary School Evaluation (see Appendix A).

In June, 1981, the researcher travelled to Antigua to administer the instrument. Follow-up discussions were held with educational officials regarding the research and the content of the instrument which was circulated in May.

The researcher then visited the schools with industrial arts programs and held briefing sessions with the principals. Subsequent meetings were held with members of the Evaluating Committees where the evaluation instrument was reviewed. A number of questions were raised and the researcher clarified doubts which committee members had about procedure and items appearing on the questionnaire. At these introductory meetings, dates were set for the evaluation exercise. The researcher sat in on some of the working sessions.

Data Analysis

Data from 12 participating schools were analysed by hand. Responses were tabulated according to the frequencies with a percentage given for each frequency.

Summary

Data for this study were collected from the members of the Self-Evaluation Committees established in the 12 schools providing industrial arts instruction in Antigua at the time of the study.

The researcher obtained permission from the Ministry of Education to conduct the study. He travelled to Antigua to administer the instrument Section 4-10 industrial arts of the *Evaluative Criteria*. In six weeks the 12 completed questionnaires were returned.

The data were abstracted and analysed by the researcher and from the analysis, conclusions and recommendations were made.

Chapter Reference

National Study of Secondary School Evaluation. Evaluative Criteria, 5th Edition. Washington: National Study of Secondary School Evaluation, 1978.

CHAPTER IV

ANALYSIS OF THE DATA

The methodology used to collect the required data for this study was outlined in Chapter III. These data will be analysed in this chapter.

Presentation of Data

The study's research instrument consisted of six sections. Organization, Nature of Offerings, Physical Facilities, Direction of Learning, Outcomes, and Special Characteristic of Industrial Arts. A four-point scale was used by the Self-Evaluation Committees to record their responses to the item statements of the research instrument. The scale was: 4 - excellent; 3 - good; 2 - fair; and 1 - poor. Two additional categories were also used. These were: ND - missing but needed; and NA - neither applicable nor desirable.

The analysed data for each section of the research instrument were tabulated using the following method. Item statements that were rated on the four-point scale were placed into one of two major categories, either High or Low. Mattel and Jacoby (1971) found that the conversion of multi-stepped scales to dichotomous or trichotomous measures did not significantly reduce either reliability or validity.) Statements rated 4 (excellent) or 3 (good) were placed in the High category. Statements rated 2 (fair) or 1 (poor) were placed in the Low category.

For this study, it was decided that if 51 percent or more of the Self-Evaluation Committees rated an item statement as High (excellent or good), the favourable members accepted the item statement. Similarly, if 49 percent or more of the Self-Evaluation Committees rated an item statement as Low (fair to poor) the members considered the item undesirable and that part of the industrial arts program would have to be modified or improved. The two additional categories--ND - "Missing But Needed" and NA - "Neither Applicable Nor Desirable"--would be classified similar to statements rated as Low.

With reference to specific items of the research instrument, the letter or number of the item would precede a percentage enclosed in parentheses; for example, nine (75%) which represents the number of the item and the total percent of the Self-Evaluation Committees' rating an item statement. Percentages in each of the tables are presented in rank order.

Organization of Industrial Arts

The organization of the industrial arts program in this study refers to a department of industrial arts in a comprehensive, secondary or all-age primary school that is planned and equipped to facilitate the teaching of the subject matter of industrial arts and may consist of one or more separate facilities to accommodate the variety of courses taught. For the instructional program to be adequately organized in terms of the evaluative instrument, it requires:

1. The systematic layout of the physical plant for effective instruction;
2. An adequate inventory of tools and equipment;
3. The development of instructional procedures for processing content;
4. The maintenance of pupil and equipment records;
5. The operation of an adequate safety program; and
6. The utilization of pupil personnel system based upon student participation.

The data in Organization of Industrial Arts (Table 1) presents the frequency of responses and a percentage for each of the sixteen items in the checklist of industrial arts in the twelve participating schools. These data indicate that seven items were rated as High (excellent or good) by 51 percent or more of the members of the Self-Evaluation Committee. The seven items in rank order were: 8 (83.3%); 3 (75%); 4 (75%); 16 (75%); 11 (66.7%); 5 (58.3%); and 6 (58.3%). It would appear that the members were satisfied with the content of these statements.

Five items were rated as Low (fair to poor) by 49 percent or more of the participants. In rank order these items were: 2 (75%); 9 (75%); 7 (58.3%); 10 (58.3%); and

Table 1

Frequency and Percentage of Self-Evaluation Committees on the Organization of Industrial Arts
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
8. In determining class sizes, is consideration given to such factors as type of activity, facilities available, and safety of students?	2	8	0	2	0	0		10/12 (83.3%)		2/12 (16.7%)			
3. To what extent do the industrial arts courses provide for a sequence of graded experiences?	2	7	3	0	0	0		9/12 (75.0%)		3/12 (25.0%)			
4. Are specific industrial arts objectives or goals identified with each course offering?	5	4	3	0	0	0		9/12 (75.0%)		3/12 (25.0%)			

Table 1 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
16. Do teachers of the various forms plan together to develop a sequential program in industrial arts?	6	3	2	0	0	1		9/12 (75.0%)		2/12 (16.7%)			1/12 (8.3%)
11. Do the staff members co-operate with the public relation efforts of the school?	4	4	2	0	2	0		8/12 (66.7%)		2/12 (16.7%)		2/12 (16.7%)	
5. To what extent is the industrial arts program organized so that adjustments can be made as new situations demand?	1	6	3	1	1	0		7/12 (58.3%)		4/12 (33.3%)		1/12 (8.3%)	
6. Are industrial arts facilities available to students, under proper supervision, outside of regular class time?	1	6	0	3	2	0		7/12 (58.3%)		3/12 (25.0%)		2/12 (16.7%)	

Table 1 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
1. To what extent is the industrial arts program in your school available to all students?	1	5	6	0	0	0		6/12 (50.0%)		6/12 (50.0%)			
12. Is the industrial arts program coordinated with other courses?	1	5	1	2	3	0		6/12 (50.0%)		3/12 (25.0%)		3/12 (25.0%)	
13. Are repair and production jobs permitted in the industrial arts program only if they are desirable educational experiences for students?	3	3	5	0	0	1		6/12 (50.0%)		5/12 (41.7%)			1/12 (8.3%)
14. Is a daily non-teaching conference period, free from regular assigned duties, provided for each teacher carrying a full schedule of classes?	1	5	3	0	3	0		6/12 (50.0%)		3/12 (25.0%)		3/12 (25.0%)	

Table 1 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
7. Are class periods of sufficient length to produce progress in learning?	1	4	6	1	0	0		6/12 (50.0%)		3/12 (25.0%)		3/12 (25.0%)	
15. Are career information and guidance an integral part of the program?	1	3	4	1	3	0		4/12 (33.3%)		5/12 (41.7%)		3/12 (25.0%)	
2. Is emphasis placed on a variety of beginning experiences in several industrial arts areas at the lower secondary school, with more experience provieed in the upper secondary school?	0	3	4	5	0	0		3/12 (25.0%)		9/12 (75.0%)			
9. Are adequate funds provided in the industrial arts budget to support all aspects of the program?	1	2	6	3	0	0		3/12 (25.0%)		9/12 (75.0%)			

Table 1 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
10. Is the program development a cooperative endeavor involving education administrators, teachers, and lay people?	0	1	7	0	4	0		1/12 (8.3%)		7/12 (58.3%)		4/12 (33.3%)	

1 (50%). An analysis of these statements indicated that the participants were dissatisfied with: the limited emphasis placed on beginning experiences in industrial arts; the inadequate funds provided to support all aspects of the program; the limited time allocated to class periods; the program development was not a cooperative effort between administrators, teachers and lay people; and the program was unavailable to ~~all~~ senior students.

The percentage of the Self-Evaluation Committees' rating of each of the four remaining items did not satisfy the criteria for a decision of either favourable or undesirable: 13 (41.7%); 15 (41.7%); 14 (25%); and 12 (25%).

Evaluation of Organization (Table 2) presents the frequency of responses and a percentage for each of the three items that deal with the evaluation of organization of industrial arts in the twelve participating schools. These data indicate that one item was rated as High (excellent or good), by 51 percent or more of the participants, while the remaining two items were rated as Low (fair to poor) by 49 percent or more of the participants. The item rated as High was "a" (58.3%). The two items rated as Low were: "c" (66.7%) and "b" (58.3%). An analysis of these items indicated that participants were unhappy with: class schedules, time allotments, class sizes, and the financial support for the program.

Table 2

Frequency and Percentage of Self-Evaluation Committees on the Evaluation of Organization
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap-plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
a. To what extent are industrial arts courses available to all students?	1	6	5	0	0	0		7/12 (58.3%)		5/12 (41.7%)			
b. How appropriate are schedules, time allotments, and class sizes for industrial arts course offerings?	1	4	6	1	0	0		5/12 (41.7%)		7/12 (58.3%)			
c. How adequate is the financial support for the industrial arts program?	1	2	5	3	0	0		4/12 (33.3%)		8/12 (66.7%)			

Comments

Nine of the Self-Evaluation Committees provided comments on the Organization of Industrial Arts. Their comments can be summarized as follows:

1. Nine committees mentioned that girls were not allowed access to industrial arts courses. In all secondary schools the subject was compulsory only to Form III. In the primary schools, it was not scheduled at Junior V.
2. Eight committees stated that the funds allocated for industrial arts were grossly inadequate.
3. Seven committees stated that the industrial arts program should be expanded to include courses in metalwork, building construction, auto-mechanics, plumbing and general electricity.
4. Six committees mentioned that the allocated time for instruction was always insufficient to conduct a good lesson.
5. Six committees stated that the space allocated for industrial arts was inadequate, as most workshops were mere replicas of regular classrooms.
6. Five committees stated that class sizes were too large and thus impeded the range of activities necessary to develop beginning experiences.
7. Three committees indicated that students and parents believed that industrial arts was for those students classified as non-academic and/or of low average ability.

Industrial Arts Courses Taught in the Government Schools (Table 3) presents the frequency of responses and percentage of industrial arts courses taught in the twelve schools. Four courses are offered in an industrial arts program: Technical drawing, woodwork, metalwork, and general electricity. All twelve schools offer courses in technical drawing and woodwork. Only four schools are equipped to offer courses in metalwork and general electricity.

Nature of Offerings

Nature of Offerings (Table 4) presents the frequency of the responses and the percentage for each of the seventeen item statements directed at the Nature of Offerings in industrial arts. These data indicate that of the seventeen item statements presented, thirteen of these statements were rated as High (excellent or good) by 51 percent or more of the participants. Following is the rank order: 8 (91.7%); 12 (91.7%); 13 (91.7%); 11 (83.3%); 15 (83.3%); 6 (75%); 7 (75%); 14 (75%); 16 (66.7%); 2 (58.3%); 3 (58.3%); 4 (58.3%); and 5 (58.3%). It would appear that the evaluation committees responded positively to these statements.

One item--17 (66.7%)--was rated as Low (fair to poor) by 49 percent or more of the participants. An analysis of this statement showed that the members of the committees were not satisfied that opportunities were provided

Table 3

Frequency and Percentage of Industrial Arts Courses Taught in the Government Schools
N = 12

Course	Frequency*	Percentage
Technical Drawing	12	100%
Woodwork	12	100%
Metalwork	4	33.3%
General Electricity	4	33.3%

* Frequency indicates the number of schools offering each course.

Table 4

Frequency and Percentage of Self-Evaluation Committees
on the Nature of Offerings
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
8. Is emphasis placed on the development of better understanding of such problems as appropriateness of material to use, quality of workmanship, design, and function?	2	9	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			
12. Are basic skills such as reading, writing, arithmetic, speaking and listening continually emphasized and made a part of the instructional program?	4	7	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			
13. Is emphasis placed on a continuous and coordinated department-wide program of safety?	4	7	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			

Table 4 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
11. Is emphasis placed on developing an ability to select, care for, and to use industrial products intelligently?	2	8	1	1	0	0		10/12 (83.3%)		2/12 (16.7%)			
15. Are student-centered activities emphasized in the teaching-learning process?	2	8	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
6. Are specific efforts in the program directed towards the development of each individual, an attitude of pride and interest in doing useful things?	4	5	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			
7. Are specific efforts directed towards the development of a working knowledge of industrial material and processes?	2	7	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			

Table 4 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
14. Are activities in the program organized to provide significant group activities and projects that involve situations that are likely to involve problems?	2	7	1	1	1	0		9/12 (75.0%)		2/12 (16.7%)		1/12 (8.3%)	
16. Are experiences provided to acquaint the student with the world of work, including its changing nature, and to help develop a wholesome attitude towards work?	1	7	3	0	1	0		8/12 (66.7%)		3/12 (25.0%)		1/12 (8.3%)	
2. Are experiences provided in selected areas so that a degree of skill in the use of common tools and machines may be developed commensurate with the student's ability and the scope of the program?	2	5	3	1	1	0		7/12 (58.3%)		4/12 (33.3%)		1/12 (8.3%)	

Table 4 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
3. Is a broad content developed in each course in the program from representative industrial process and materials appropriate for a school shop?	0	7	3	2	0	0		7/12 (58.3%)		5/12 (41.7%)			
4. Are meaningful learn-by-doing opportunities planned with real materials, processes and products of industry?	2	5	3	2	0	0		7/12 (58.3%)		5/12 (41.7%)			
5. Has industry's role in the development of the Antigua way of life been emphasized in each course area?	2	5	1	3	1	0		7/12 (58.3%)		4/12 (33.3%)		1/12 (8.3%)	

Table 4 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
1. To what extent do the industrial arts courses provide opportunities for students to plan, construct, and evaluate in terms of their interests and aptitudes?	1	4	2	3	2	0		7/12 (58.3%)		4/12 (33.3%)		1/12 (8.3%)	
9. Are specific efforts made to develop an awareness of the variety of activities performed in our industrial environment that provide possibilities for leisure activities?	2	3	4	1	2	0		5/12 (41.7%)		5/12 (41.7%)		2/12 (16.7%)	
10. Is an overview of working conditions and labour management problems included in the instructional program?	0	4	1	2	4	1		4/12 (33.3%)		3/12 (25.0%)		4/12 (33.3%)	1/12 (8.3%)

Table 4 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
17. Are students provided an opportunity for in-depth specialization in areas of their respective aptitudes and interests?	1	1	6	2	2	0		2/12 (16.7%)		8/12 (66.7%)		2/12 (16.7%)	

for students to pursue in-depth specialization in areas of their respective aptitudes and interests.

The three remaining items each received a high rating of 1 (41.7%), 9 (41.7%), and 10 (33.3%), respectively. In all three cases, the members of the evaluation committees intimated that emphasis must be placed on the content of these item statements.

General Evaluation of Nature of Offerings (Table 5) presents the frequency distribution of the responses of the participants to the five items of the general evaluations of the Nature of Offerings of industrial arts. The data indicate that one of the items was rated as High (excellent or good) by 51 percent or more of the participants. The item was "a" (58.3%). Three of the four remaining items were rated Low (fair to poor) by 49 percent or more of the participants. These three items in rank order were: "b" (58.3%); "c" (50%); and "e" (50%). An analysis of these items showed that participants were not satisfied with: the scope and sequence of industrial arts courses in relation to the interests, abilities and developmental needs of students; that the offerings of the industrial arts program provided exploratory or try-out experiences with a variety of tools, materials, and industrial processes; that industrial arts students developed attitudes of responsibility and leadership from the program.

Item "d" (41.7%) did not qualify for a High or Low rating. The evaluators rated it as "Missing But Needed."

Table 5

Frequency and Percentage of Self-Evaluation Committees
on the Evaluations of Nature of Offerings
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
a. To what extent are the information and experiences offered in the program related to modern industry?	2	5	4	1	0	0		7/12 (58.3%)		5/12 (41.7%)			
c. To what extent do the offerings provide exploratory or tryout experiences with a variety of tools, materials, and industrial processes?	2	4	5	1	0	0		6/12 (50.0%)		6/12 (50.0%)			
e. To what extent is student responsibility and leadership developed?	1	5	6	0	0	0		6/12 (50.0%)		6/12 (50.0%)			

Table 5 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
b. To what extent are scope and sequence of courses related to the interests, abilities and developmental needs of students?	2	2	6	1	1	0		4/12 (33.3%)		7/12 (58.3%)		1/12 (8.3%)	
d. To what extent do students understand labour-management problems?	0	3	1	3	5	0		3/12 (25.0%)		4/12 (33.3%)		5/12 (41.7%)	

An analysis revealed that there was need for the program to offer courses on labour-management relations.

Comments

Six of the twelve evaluation committees provided comments on the Nature of Offerings of industrial arts. The comments were as follows:

1. All six committees stated that a greater variety of industrial arts courses is needed.
2. Five committees stated that only hand tools were available in their shops; their students were exposed to a few basics in woodwork and metalwork.
3. Five committees reported that the schools were oriented to preparing students to write the London and Cambridge external examinations and, consequently, did not allow the industrial arts program to cater to the basic needs of the students and society.
4. Two committees reported that the program outlined in the curriculum guide by the Ministry of Education did not generate student interest. Students were unable to identify with the present program requirements. Students did not develop enough useful skills.
5. One committee reported that students were not encouraged to plan, design and construct their own projects according to interests and aptitudes because the authorities did not generally supply adequate amounts of materials; in addition materials often arrived in the shop too late

in the school term to allow completion of the major projects.

Physical Facilities

"Physical facilities" is a generic term which refers to the room or space that an industrial arts department occupies. This includes the hand and power tools, equipment, instructional materials, supplies, space provided for storage, space provided for individual and group work, and special requirements for the activities being conducted. These are all arranged to provide for flexibility, safety, and student utility.

Physical Features (Table 6) presents the frequency of the responses and a percentage for each of the 38 items in the physical facilities checklist in the twelve participating schools. The data indicate that of the 38 items in the checklist, nine items were rated as High (excellent or good) by 51 percent or more of the participants. Six items were rated as Low (fair to poor) and nine items were rated as ND (Missing But Needed) by 49 percent or more of the participants. The nine items that were rated as High, in rank order, were: 15 (91.7%); 34 (91.7%); 8 (83.3%); 10 (83.3%); 37 (83.3%); 36 (75%); 1 (66.7%); 4 (66.7%); and 38 (58.3%). It would appear that the evaluation committees reacted favourably to these statements.

The six items that were rated as Low were:

Table 6

Frequency and Percentage of Self-Evaluation Committees on the Physical Facilities of Industrial Arts
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
15. Is there appropriate storage for tools?	1	10	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			
34. Are all tools and equipment properly maintained?	1	10	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			
8. Is the ceiling height appropriate for the activities being conducted?	6	4	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
10. Are wall surfaces durable and easily cleaned?	4	6	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
37. Are the facilities clean and adequately maintained?	1	9	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
36. Are adequate chalkboards and bulletin boards provided?	0	9	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			
1. Are facilities appropriately located as a unit for students as well as for adult evening classes?	1	7	0	1	2	1		8/12 (66.7%)		1/12 (8.3%)		2/12 (16.7%)	1/12 (8.3%)
4. Are floors in good condition and suited to the area in which they are located? Are precautions taken against slippery floors and is special attention given to machine areas?	1	7	2	1	1	0		8/12 (66.7%)		3/12 (25.0%)		1/12 (8.3%)	
38. To what extent are good planning and organization in evidence?	2	5	5	0	0	0		7/12 (58.3%)		5/12 (41.7%)			

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
3. Is natural light effectively controlled to eliminate glare and is sufficient supplemental artificial light provided properly diffused and distributed?	2	4	3	3	0	0		6/12 (50.0%)		6/12 (50.0%)			
31. Is there a master electrical panel conveniently located in each workshop?	4	2	0	0	4	1	1	6/12 (50.0%)		0/12 (0%)		4/12 (33.3%)	1/12 (8.3%)
2. Is the total floor area consistent with accepted standards?	2	3	6	0	1	0		5/12 (41.7%)		6/12 (50.0%)		1/12 (8.3%)	
7. Do the workshops have appropriate entrance and exist doors?	3	2	4	3	0	0		5/12 (41.7%)		7/12 (58.3%)			
13. Is convenient office or desk space provided?	0	5	1	4	2	0		5/12 (41.7%)		5/12 (41.7%)		2/12 (16.7%)	

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
17. Is safe storage provided for all supplies including accommodation for full-length stock?	1	4	5	0	2	0		5/12 (41.7%)	5/12 (41.7%)	2/12 (16.7%)	
29. Are conveniently located and appropriately painted switches or control boxes provided on all power machines? Are these easily accessible from the position of the operator?	2	3	0	0	1	5	1	5/12 (41.7%)	0/12 (0%)	1/12 (8.3%)	5/12 (41.7%)
11. Are appropriate washing facilities provided?	1	2	1	0	8	0	0	3/12 (25.0%)	1/12 (8.3%)	8/12 (66.7%)	
14. Is filing space adequately provided for all necessary records, pamphlets, and illustrative materials?	0	3	5	0	4	0		3/12 (25.0%)	5/12 (41.7%)	4/12 (33.3%)	

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
16. Are the principles of colour dynamics followed for each workshop and equipment?	0	3	2	2	4	0	1	3/12 (25.0%)		4/12 (33.3%)		4/12 (33.3%)	
18. Is adequate storage provided for individual and class projects under construction as well as for items in the assembling and finishing stages?	1	2	5	2	2	0		3/12 (25.0%)		7/12 (58.3%)		2/12 (16.7%)	
21. Are work stations sufficient in number to provide flexibility?	0	3	4	1	1	3		3/12 (25.0%)		5/12 (41.7%)		1/12 (8.3%)	3/12 (25.0%)
23. Is a demonstration and discussion area provided with space for each students?	2	1	2	0	7	0		3/12 (25.0%)		2/12 (16.7%)		7/12 (58.3%)	

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
26. Do the quantity, type, and variety of tools, instruments and equipment provided meet the needs of the program?	0	3	5	4	0	0		3/12 (25.0%)		9/12 (75.0%)			
32. Are machines wired into the building provided with disconnect switches?	1	2	0	1	2	5	1	3/12 (25.0%)		1/12 (8.3%)		2/12 (16.7%)	5/12 (41.7%)
35. Are appropriate safety clothing and protective devices provided and used?	0	3	1	3	5	0		3/12 (25.0%)		7/12 (33.3%)		5/12 (41.7%)	
19. Are appropriate storage lockers provided for students?	0	2	3	7	0	0		2/12 (16.7%)		10/12 (83.3%)			

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
20. Is equipment arranged with reference to sequence of operations and their relationship to other areas. Is adequate clearance, as dictated by the function of the machine, provided around all equipment?	1	1	1	3	6	0		2/12 (16.7%)	4/12 (33.3%)	6/12 (50.0%)	
24. Are library and planning facilities provided with adequate space for storage of books, magazines and folders?	1	1	0	1	9	0		2/12 (16.7%)	1/12 (8.3%)	9/12 (75.0%)	
25. Are facilities and equipment provided for using audio-visual instructional materials?	1	1	1	3	6	0		2/12 (16.7%)	4/12 (33.3%)	6/12 (50.0%)	

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
27. Are all power machines and manually operated equipment provided with effective guards to be used by the operators at all times?	1	1	3	0	4	3		2/12 (16.7%)	3/12 (25.0%)	4/12 (33.3%)	3/12 (25.0%)
28. Are unit-type machines with self-contained motors used throughout the program; and is the equipment adapted to the size and maturity of the students, i.e. height from floor to the working surface of a machine, horsepower, speed and capacity?	2	0	1	0	5	3	1	2/12 (16.7%)	1/12 (8.3%)	5/12 (41.7%)	3/12 (25.0%)
6. Are properly designed and located gas, water and compressed air facilities provided where needed?	1	0	0	1	7	4	0	1/12 (8.3%)	1/12 (8.3%)	7/12 (58.3%)	4/12 (33.3%)

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
30. Are appropriately identified safety zones marked around machines and in areas where there are potential hazards?	0	1	1	1	3	5	1	1/12 (8.3%)		2/12 (16.7%)		3/12 (25.0%)	5/12 (41.7%)
5. Is exhaust ventilation equipment available in areas where excessive heat, fumes, gases and dust are produced?	0	0	0	1	5	6		0/12 (0%)		1/12 (8.3%)		5/12 (41.7%)	6/12 (50.0%)
9. Are fire extinguishers of the correct type and size provided for each workshop?	0	0	0	2	10	0		0/12 (0%)		2/12 (16.7%)		10/12 (83.3%)	
22. Is there a finishing area which is adequate in size, appropriately located, properly lighted and ventilated, easily supervised and relatively free from dust?	0	0	1	2	9	0		0/12 (0%)		3/12 (25.0%)		9/12 (75.0%)	

Table 6 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
12. Are display cases provided of sufficient size, properly lighted and appropriately located?	0	0	0	1	11	0		0/12 (0%)		1/12 (8.3%)		11/12 (91.7%)	
33. Are machines provided with low voltage and overload protection where needed?	0	0	1	1	4	5	1	0/12 (0%)		2/12 (16.7%)		4/12 (33.3%)	5/12 (41.7%)

19 (83.3%); 26 (75%); 7 (58.3%); 18 (58.3%); 2 (50%); and 3 (50%). An analysis of these six items showed that the participants were dissatisfied with: the absence of students' storage lockers; the quantity, type and variety of tools, instruments and equipment provided to meet the needs of the program; the provision to enter and exit the workshop; the storage provided for individual and class projects under construction as well as for items in the assembling and finishing stages; the limited floor space provided; and the insufficient supply of supplemental artificial light to illuminate the workshop.

The nine items that were rated as ND (Missing but Needed) by 49 percent or more of the participants in rank order were: 12 (91.7%); 9 (83.3%); 22 (75%); 24 (75%); 11 (66.7%); 6 (58.3%); 23 (58.3%); 20 (50%); and 25 (50%). An analysis of the nine items showed that the members of the Self-Evaluation Committees would welcome in their industrial arts shop: a display case of sufficient size; a fire extinguisher of the correct size and type in each workshop; a finishing area adequate in size, well located, properly lighted, and ventilated and free from dust; a library or planning section located away from areas of noise or dust; properly designed and located gas, water, electrical and compressed air facilities in each separate section of the shop where these facilities were needed; a demonstration and discussion area with space for each student; adequate clearance around all machines and equipment; and the availability of teaching aids such as pictures, film strips, slides, overhead projectors, and screens.

The remaining fourteen items and percentages of the Self-Evaluation Committees' High ratings in rank order were: 31 (50%); 13 (41.7%); 17 (41.7%); 29 (41.7%); 14 (25%); 16 (25%); 21 (25%); 32 (25%); 35 (25%); 27 (16.7%); 28 (16.7%); 30 (8.3%); 5 (0%); and 33 (0%).

Evaluation of Physical Facilities (Table 7) presents the frequency of the responses and the percentage for each of the five items that deal with the evaluations of physical facilities of industrial arts in the twelve participating schools. These data indicated that one item was rated as High by 51 percent or more of the participants, while three items were rated as Low by 49 percent or more of the participants. The item rated as High was "e" (66.7%). The items rated as Low in rank order were: "b" (66.7%); "d" (66.7%); and "c" (58.3%). An analysis of these items indicated that the members of the Self-Evaluation Committees were not satisfied with: the storage space provided; the machinery, tools and equipment supplied; the health and safety measures in their shops; and the space provided and the layout of the shops. There was one item that did not fit the category of High or Low.

Table 7

Frequency and Percentage of Self-Evaluation Committees on the Evaluations of Physical Facilities of Industrial Arts
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
e. How adequate is the arrangement for maintenance of equipment?	1	7	2	1	1	0		8/12 (66.7%)	3/12 (25.0%)	1/12 (8.3%)	
a. How satisfactory is the space and layout of the shop?	1	5	2	3	1	0		6/12 (50.0%)	5/12 (41.7%)	1/12 (8.3%)	
c. How satisfactory are health and safety measures?	1	4	7	0	0	0		5/12 (41.7%)	7/12 (58.3%)		
b. How adequate are the tools and equipment?	0	4	7	1	0	0		4/12 (33.3%)	8/12 (66.7%)		
d. How adequate are provisions for storage?	1	3	7	1	0	0		4/12 (33.3%)	8/12 (66.7%)		

Comments

All twelve evaluation committees provided comments on the Physical Facilities for industrial arts in their schools. The comments were:

1. Twelve committees reported having insufficient tools and equipment for every area of industrial arts: wood, metal, drafting and general electricity.
2. Twelve committees reported that storage space for students' projects and supplies was inadequate.
3. Twelve committees reported that space for industrial arts instruction was inadequate.
4. Five committees reported that increased space, power tools and machines were needed.
5. Five committees reported that one room was used for the entire industrial arts program. These participants stated that these rooms were very small, poorly located and were usually very hot and uncomfortable for work.
6. Four committees reported that the planning and construction of workshops were not consistent with the contour, drainage, and location of the site. In the rainy season, the majority of the buildings flooded, resulting in damage to equipment, supplies, furniture and projects.
7. Three committees reported that most power tools, although suited for the purpose, caused problems when spare parts, accessories, and attachments were required. The quality of electrical motors used on some machines was poor

because they often overheat and burn out. Spare parts were not easily available.

8. Three committees reported that their machines generallly were not supplied with accessories and attachments. These problems with the machines limited their use.
9. Three committees reported that only one "entrance-exit" door was provided.
10. One committee reported that it has been waiting for nearly two years to have its power tools connected to the three phase electrical supply.

Direction of Learning
Sub-Section A: Instructional Staff

Instructional staff refers to the personnel in the industrial arts department who are assigned the responsibility of teaching industrial arts courses. These personnel are expected to be qualified and competent in the assigned fields. They are expected to understand the curriculum, know the objectives and goals to be achieved, the methods of teaching to be employed, and the various activities to be undertaken.

Direction of Learning: Sub-Section A. Instructional Staff (Table 8) presents the frequency of the responses and a percentage for each of the twelve items in the checklist that deal with the instructional staff of industrial arts in the twelve participating schools. These data indicate that, of the twelve items presented, seven were rated as High

Table 8

Frequency and Percentage of Self-Evaluation Committees on the Direction of Learning A: Instructional Staff
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
4. Do the teachers recognize the importance of activities in the instructional program?	3	9	0	0	0	0		12/12 (100%)	0/12 (0%)	0/12 (0%)	0/12 (0%)
1. Is a well-defined philosophy of education held by industrial arts teachers?	2	9	1	0	0	0		11/12 (91.7%)	1/12 (8.3%)		
3. Do the industrial arts teachers possess competency in a variety of teaching methods?	0	11	1	0	0	0		11/12 (91.7%)	1/12 (8.3%)		
8. Are industrial arts teachers aware of teaching problems in other areas, and do they work for the improvement of the entire school program?	3	8	1	0	0	0		11/12 (91.7%)	1/12 (8.3%)		

Table 8 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
12. To what extent do industrial arts teachers maintain an active interest in professional advancement, including participation in educational organization?	1	7	2	2	0	0		8/12 (66.7%)		4/12 (33.3%)			
7. To what extent do industrial arts teachers discuss their curriculum and sponsor activities which help their colleagues to a better understanding of the program?	3	4	4	1	0	0		7/12 (58.3%)		5/12 (41.7%)			
9. Do industrial arts teachers understand counselling procedures and guidance services to help students with educational and vocational choices?	2	5	5	0	0	0		7/12 (58.3%)		5/12 (41.7%)			

Table 8 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap-plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
6. To what extent do the industrial arts teachers strive to keep abreast of professional literature and research in the field of education?	3	3	6	0	0	0		6/12 (50.0%)		6/12 (50.0%)			
2. To what extent are industrial arts teachers properly qualified and certificated?	0	5	7	0	0	0		5/12 (41.7%)		7/12 (58.3%)			
11. To what extent do industrial arts teachers maintain active participation in in-service education through formal study?	1	4	6	1	0	0		5/12 (41.7%)		7/12 (58.3%)			

Table 8 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
5. Do the teachers invite parents' and community's reactions to the industrial arts program?	2	1	8	0	1	0		3/12 (25.0%)		8/12 (66.7%)		1/12 (8.3%)	
10. Are industrial arts teachers qualified in first aid and safety procedures?	1	1	7	0	1	0		2/12 (16.7%)		7/12 (58.3%)		1/12 (8.3%)	

(excellent or good) by 51 percent or more of the participants. These seven items in rank order were: 4 (100%); 1 (91.7%); 3 (91.7%); 8 (91.7%); 12 (66.7%); 7 (58.3%); and 9 (58.3%). The Evaluation Committees appear to be satisfied with these statements.

The five remaining items were rated as Low (fair to poor) by 49 percent or more of the participants. These five items were: 5 (66.7%); 2 (58.3%); 10 (58.3%); 11 (58.3%); and 6 (50%). An analysis of these five items indicated that the members of the Self-Evaluation Committees were dissatisfied with: the limited input of parents and community involvement in the industrial arts program; the level of qualification and certification of industrial arts teachers; the limited knowledge staff members have in first aid and safety procedures; the inactivity of staff members in in-service education and formal study; and the inability of the teachers to keep themselves informed about current educational literature and research in industrial arts.

Evaluations of Instructional Staff (Table 9) presents the frequency of the responses and a percentage for each of the five items that deal with the evaluations of instructional staff of industrial arts in the twelve participating schools. These data indicate that four items were rated as High (excellent or good) by 51 percent or more of the participants, and that one item was rated as Low (fair to poor) by 49 percent or more of the participants. The items rated as High were: "a" (83.3%); "e" (83.3%); "d" (66.7%); and

Table 9

Frequency and Percentage of Self-Evaluation Committees on
the Evaluations of Instructional Staff
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap-plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
a. To what extent do industrial arts teachers possess a well-defined point of view towards industrial arts education?	2	8	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
e. How adequate is the technical knowledge of industrial arts teachers in the area of teaching responsibility?	3	7	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
d. To what extent do industrial arts teachers discuss educational problems with fellow teachers, their administrators, and with the general public?	3	5	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			

Table 9 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
c. To what extent are industrial arts teachers informed about current educational literature and research?	3	4	5	0	0	0		7/12 (58.3%)		5/12 (41.7%)			
b. To what extent do industrial arts teachers possess satisfactory qualifications?	0	5	7	0	0	0		5/12 (41.7%)		7/12 (58.3%)			

"c" (58.3%). It would appear that the content of these statements was favourable to the members of the Self-Evaluation Committees.

The item rated as Low was "b" (58.3%). An analysis of this item indicated that members of the Self-Evaluation Committees were not satisfied with the level of qualification of industrial arts teachers.

Comments

Five of the twelve Self-Evaluation Committees provided comments on Instructional Staff. Their comments can be summarized as follows:

1. All five committees stressed the critical shortage of industrial arts teachers in the schools.
2. Four committees suggested that a series of courses for the upgrading of industrial arts teachers be undertaken by the Ministry of Education in association with local, regional or sub-regional institutions.
3. Three committees recommended that the Ministry of Education should aim at attracting more qualified industrial arts teachers with degrees. They also recommended that the salaries of technical teachers should be substantial to attract the best products.
4. Two committees stated that professional attitude of industrial arts teachers left much to be desired. Many teachers were only exploiting the opportunities, the privilege, and the use of equipment for personal gains.

5. Two committees stated that there was need for the formation of an Industrial Arts Teachers' Association that would keep the members professionally informed through conferences, regular discussions, and the sharing of literature.

Supplementary Data (Instructional Staff)

Qualification of Industrial Arts Teachers (Table 10) presents the frequency of responses and a percentage for industrial arts teachers with: (a) less than an industrial arts teacher's certificate; (b) those who possess an industrial arts teacher's certificate or equivalent. These data indicate that there were 64 percent qualified industrial arts instructors, and 28 percent unqualified industrial arts instructors in the twelve government schools. The data also indicated that there were eight percent of industrial arts instructors with Bachelor's Degrees, but none with a Master's Degree at the time of the study.

The Terminal Hours of Preparation by Industrial Arts Teachers in the School (Table 11) presents the frequency of responses and a percentage for the terminal hours teachers in the twelve participating schools used in preparing industrial arts education. These data indicate that there were: 74 percent of industrial arts instructors with more than 48 hours per term of preparation in industrial arts, 21.7 percent of instructors with 24 to 48 hours per term of preparation in industrial arts, and 4.3 percent of instructors

Table 10

Qualification of Industrial Arts Teachers in the Government Schools

Educational Level	Frequency*	Percentage
Less than Industrial Arts Teacher's Certificate	7	28%
Industrial Arts Teacher's Certificate	16	64%
Bachelor's Degree	2	8%
Master's Degree	0	0%

* Frequency indicates the number of teachers in each category.

Table 11

Terminal Hours of Preparation by Industrial
Arts Teachers in the Government Schools
N = 12

Terminal Hours	Frequency*	Percentage
0 - 11	0	0%
12 - 23	1	4.3%
24 - 48	5	21.7%
More Than 48	17	74.0%

* Frequency indicates the number of teachers in each range.

with twelve to 23 hours per term of preparation in industrial arts.

The Number of Years Since Teachers' Last Formal Study of Industrial Arts (Table 12) presents the frequency of responses and a percentage for the years since industrial arts teachers in the twelve participating schools had their last formal education in that area. These data indicate that there were 43.5 percent of industrial arts teachers whose last formal study of industrial arts was zero to three years ago, 39.1 percent of the teachers whose last formal study of industrial arts was four to seven years ago, and 17.4 percent of teachers whose last formal study of industrial arts was eight to twelve years ago.

Previous Experience of Industrial Arts Teachers in the Government Schools (Table 13) presents the frequency of responses and a percentage for the years of experience of industrial arts teachers in the twelve participating schools. These data indicate that there were 43.5 percent of industrial arts teachers whose previous experience in teaching industrial arts was six to 15 years; 30.4 percent of teachers with experience ranging from three to five years; 21.7 percent of teachers with experience ranging from zero to two years; and 4.5 percent of the teachers with more than 15 years' teaching experience in industrial arts.

Table 12

Number of Years Since Teachers' Last Formal Study of Industrial Arts
N = 12

Years	Frequency*	Percentage
0 - 3	10	43.5%
4 - 7	9	39.1%
8 - 12	4	17.4%
More than 12	0	0%

* Frequency indicates the number of teachers in each range.

Table 13

Previous Experience of Teachers of Industrial Arts Teaching in the Government Schools

N = 12

Years	Frequency*	Percentage
0 - 2	5	21.7%
3 - 5	7	30.4%
6 - 15	10	43.5%
More than 15	1	4.5%

* Frequency indicates the number of teachers in each range.

Teacher-Training Facilities

Industrial arts teachers in Antigua are trained through facilities regionally--in St. Lucia--and extra-regionally--in the United Kingdom and Canada. Members of the Self-Evaluation Committees commented on the three levels of training as follows:

1. All twelve committees recognized the initial Industrial Arts Teacher Training Program in St. Lucia as "a good thing." The program covers three basic areas: woods, metals and drafting. These courses provide the basic knowledge to equip teachers to instruct industrial arts at the junior high school level. There were, however, a number of problems encountered by the trainees: shortage of instructors, lack of equipment, shortage of supplies, sharing facilities with other departments, and insufficient supervision. The duration of the course--one year--was considered too short. The committees recommended that the program be broadened to include general electricity, automotive and graphic arts, and be extended into a two-year program that would prepare instructors for both programs at the junior and senior high schools.
2. Four committees commented on the industrial arts training offered in the United Kingdom. They recommended the program as a good follow-up program to the St. Lucia initial training program. The participants described it

as one of greater scope and depth covering: woods, metals, drafting, plastics, pottery, basic design, and general electricity. Because Britain is an industrialized country, the program offers scope for visits to industries and brief attachments. The committee members would welcome the extension of this program to two years, and the inclusion of a definite period of industrial attachment.

3. Four committees commented on the training in Canada. They described it as the ideal training program required by industrial arts instructors in Antigua. The program is conceived as General Education and covers: Materials, Electricity, Electronics, Automotive, Graphic Arts and Graphic Communications and the related academic subjects. The program duration is from three to four years and leads to a Bachelor's Degree, sometimes preceded by a Teacher's Certificate. Ideally, all industrial arts teachers should possess a minimum of a Bachelor's degree.
4. One committee noted that entry to these training institutions is usually through Technical Aid Programs from the British Development Division and the Canadian International Development Agency. A substantial increase in the Antigua quota will help to alleviate the acute shortage of industrial arts teachers.

Direction of Learning
Sub-Section B: Instructional Activities

An effective industrial arts program is student-centered. The learning activities should be varied and appropriate for the level of development and specific learning situation of the student. Instructional activities are the major divisions of work in an industrial arts laboratory. They may include operations in woodwork, metalwork, drafting, electricity, electronics, graphic arts, automotives, welding and many others.

The data in Direction of Learning, Sub-Section B. Instructional Activities (Table 14) represents the frequency of the responses and a percentage for each of the 19 items in the checklist that deal with the instructional activities of industrial arts in the twelve participating schools. These data indicate that of the 19 items in the checklist, 11 items were rated as High (excellent or good) by 51 percent or more of the participants, and seven items were rated as Low (fair to poor) by 49 percent or more of the participants.

The 11 items that were rated as High, in rank order, were: 2 (91.7%); 3 (91.7%); 4 (91.7%); 5 (91.7%); 7 (91.7%); 8 (75%); 9 (75%); 16 (75%); 1 (66.7%); 10 (66.7%); and 17 (58.3%). The Evaluation Committees responded favourably to these statements.

The seven items that were rated as Low, in rank order, were: 11 (58.3%); 13 (58.3%); 14 (58.3%); 15 (58.3%);

Table 14

Frequency and Percentage of Self-Evaluation Committees on Direction of Learning B: Instructional Activities
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
2. Are courses, outlines and lesson plans developed for each activity or series of activities?	3	8	1	0	0	0		11/12 (91.7%)	1/12 (8.3%)		
3. To what extent do teachers recognize student ability levels in developing each phase of the industrial arts program?	3	8	1	0	0	0		11/12 (91.7%)	1/12 (8.3%)		
4. Are specific efforts directed towards the attainment of appropriate social relationships and good work habits and attitudes?	3	8	0	1	0	0		11/12 (91.7%)	1/12 (8.3%)		

Table 14 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
5. Do students work in groups and exchange ideas in the solution of problems?	3	8	0	0	1	0		11/12 (91.7%)		0/12 (0%)		1/12 (8.3%)	
7. To what extent do the industrial arts activities provide an opportunity for students to become familiar with, and to use many of the basic tools and machines of industry?	2	7	3	0	0	0		9/12 (75.0%)		3/12 (25.0%)			
8. Do students learn how a variety of commercial products are made?	1	8	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			
9. Do students study the sources of materials and supplies, their characteristics and limitations?	3	6	3	0	0	0		9/12 (75.0%)		3/12 (25.0%)			
16. Do teachers employ a wide variety of suitable materials and techniques during instruction?	1	8	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			

Table 14 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
1. To what extent are learning activities in the industrial arts program related directly to the attainment of desired student behavior changes, identified with special industrial arts activities?	1	7	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			
10. Do students develop appropriate drawings or plans and follow a systematic order of procedure in relation to a problem or project?	3	5	3	0	1	0		8/12 (66.7%)		3/12 (25.0%)		1/12 (8.3%)	
17. Are field trips related to industrial arts experience provided?	6	1	2	3	0	0		7/12 (58.3%)		3/12 (41.7%)			
6. To what extent does industrial arts education attempt to familiarize students with management and production practices of industry?	1	5	4	2	0	0		6/12 (50.0%)		6/12 (50.0%)			

Table 14 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
12. Are numerous activities planned to help students develop qualities of leadership?	0	6	5	0	1	0		6/12 (50.0%)		5/12 (41.7%)		1/12 (8.3%)	
18. To what extent are audio-visual materials used in the instructional process?	5	1	2	4	0	0		6/12 (50.0%)		6/12 (50.0%)			
19. Are the career goals of students identified and discussed as they explore possible industrial occupations?	1	3	7	0	1	0		4/12 (33.3%)		7/12 (58.3%)		1/12 (8.3%)	
13. Do students draw on the many out-of-school sources of information in fulfilling assignments?	1	2	7	0	2	0		3/12 (25.0%)		7/12 (58.3%)		2/12 (16.7%)	
11. To what extent are community resources used as aids to instruction?	1	1	5	2	3	0		2/12 (16.7%)		7/12 (58.3%)		3/12 (25.0%)	

Table 14 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
14. Are provisions made for students to participate in related extra-curricular activities?	1	1	7	0	3	0		2/12 (16.7%)		7/12 (58.3%)		3/12 (25.0%)	
15. To what extent do students take an active part in the safety program by serving as student-safety supervisors, solving thought-inducing safety problems and taking safety tests?	1	1	6	1	3	0		2/12 (16.7%)		7/12 (58.3%)		3/12 (25.0%)	

19 (58.3%); 6 (50%); and 18 (50%). An analysis of these seven items indicated that the members of the Self-Evaluation Committees were not satisfied with: the amount of community resources used as aids to instruction; the amount of out-of-school sources of information used by students in completing industrial arts assignments; the lack of specific provisions in the industrial arts program to accommodate individual differences in the students; the lack of any provision in the industrial arts program for familiarizing students with management and production practices of industry as these affect both workers and the production of goods and services; the lack of active participation by students in safety programs and tests; the limited use of audio-visual materials in the teaching and learning process; and the lack of discussions of career goals in the industrial arts program.

The remaining item, and the percentage of Self-Evaluation Committees rating as High was 12 (50%).

General Evaluations of Instructional Activities (Table 15) presents the frequency of responses and a percentage of each of the three items that deal with the evaluations of instructional activities of industrial arts in the twelve participating schools. These data indicate that all three items were rated as High (excellent or good) by 51 percent or more of the participants. The rank order of these items were: "b" (83.3%); "a" (75%); and "c" (58.3%). The Evaluation Committees responded favourably to these statements.

Table 15

Frequency and Percentage of Self-Evaluation Committees on the Evaluation of Instructional Activities
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap-plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
b. How adequate is the planning and preparation for instructional activities?	3	7	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
a. How effectively do instructional activities relate to students' needs and program goals?	1	8	3	0	0	0		9/12 (75.0%)		3/12 (25.0%)			
c. How effective is the teaching of industrial arts?	0	7	5	0	0	0		7/12 (58.3%)		5/12 (41.7%)			

Comments

Four committees provided comments on Instructional Activities of Industrial Arts. These comments can be summarized:

1. Two committees mentioned that students were highly interested in drafting, woodwork, metalwork, and general electricity, but instructors in these areas were in short supply.
2. Two committees reported that most students develop a high level of skills with the basic hand tools; however, there was a lack of activities involving power tools and the development of industrial processes.
3. One committee mentioned that because of the present student admission policy they are obliged to cater to students with wide ranging academic abilities. The industrial arts program has to be tailored to suit both the highly academic students and those who cannot read.
4. One committee reported that the industrial arts program did not suit the needs of the students and the community, but instead was organized towards preparing students to pass the London and Cambridge General Certificate of Education Examinations.
5. Another committee commented that instructional activities were theoretically oriented because of the shortage of equipment, tools and materials.

Direction of Learning
Sub-Section C: Instructional Materials

The term "instructional materials" is used to define any type of audio or visual stimulus used to reinforce instruction either spoken or in printed form. Instructional materials need to be provided to industrial arts teachers and used by them if they are to achieve maximum teaching effectiveness.

Direction of Learning: Sub-Section C: Instructional Materials (Table 16) presents the frequency distribution of the responses of the Self-Evaluation Committees, to the eight items in the checklist dealing with the instructional materials of industrial arts. These data indicate that, of the eight items presented, two were rated as High (excellent or good) by 51 percent or more of the participants. These two items were: 6 (66.7%) and 1 (58.3%). An analysis of these items indicated that the participants were satisfied with: teacher prepared materials such as study guides, course outlines, and resource units, and the current textbooks supplied by the Ministry of Education. Three items on the checklist were rated as Low (fair to poor) by 49 percent or more of the participants. These items in rank order were: 2 (58.3%); 7 (58.3%); and 3 (50%). An analysis of these items substantiates the dissatisfaction of the participants with: the shortage of reference materials for each area of industrial arts; the unavailability of posters, charts, graphs, and pictures as instructional aids; and the

Table 16

Frequency and Percentage of Self-Evaluation Committees on the Direction of Learning C: Instructional Materials
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
6. Are teacher-prepared materials such as study guides, course outlines and resource units available?	1	7	1	0	3	0		8/12 (66.7%)		1/12 (8.3%)		3/12 (25.0%)	
1. Are up-to-date textbooks available?	3	4	4	1	0	0		7/12 (58.3%)		5/12 (41.7%)			
2. Are appropriate reference materials available in each area?	1	1	6	1	3	0		2/12 (16.7%)		7/12 (58.3%)		3/12 (25.0%)	
7. Are posters, charts, graphs and pictures to aid instruction available?	0	2	6	1	3	0		2/12 (16.7%)		7/12 (58.3%)		3/12 (25.0%)	

Table 16 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
3. Are descriptive materials and commercial products available for instruction?	0	1	5	1	5	0		1/12 (8.3%)	6/12 (50.0%)	5/12 (41.7%)	
4. Are periodicals, pamphlets and suitable materials for students' use available in each area of instruction?	0	1	2	2	7	0		1/12 (8.3%)	4/12 (33.3%)	7/12 (58.3%)	
8. Is the overhead projector a prominent piece of equipment in the classroom?	1	0	0	3	8	0		1/12 (8.3%)	3/12 (25.0%)	8/12 (66.7%)	
5. Are films, filmstrips, slides and projectors provided for instructional aids?	0	0	0	1	11	0			1/12 (8.3%)	11/12 (91.7%)	

absence of descriptive and commercial products for instructional purposes.

Three items on the checklist were identified as ND (Missing but Needed) by 49 percent or more of the participants. These items in rank order were: 5 (91.7%); 8 (66.7%); and 4 (58.3%). The members of the Self-Evaluation Committees would appreciate the addition of these facilities to their industrial arts program: films, filmstrips, slides, film projectors, overhead projectors, tape recorders, current periodicals, pamphlets and other software for student use in each area of industrial arts.

General Evaluations of Instructional Materials (Table 17) presents the frequency distribution of the responses of the participants to the three items of general evaluations of instructional materials of industrial arts. These data indicate that one item--"a" (75%)--was rated as High (excellent or good) by 51 percent or more of the participants, while two items were rated as Low (fair or poor) by 49 percent or more of the participants. Those items rated as Low were: "c" (83.3%) and "b" (50%). An analysis of these items indicated that the evaluators would like to see emphasis placed on the acquisition of a variety of instructional materials, reference materials and additional textbooks.

Table 17

Frequency and Percentage of Self-Evaluation Committees on
the Evaluations of Instructional Materials
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
a. How extensively are teaching guides followed?	2	7	2	1	0	0		9/12 (75.0%)		3/12 (25.0%)			
b. To what degree are quality and relevant text/reference materials used?	1	3	6	0	2	0		4/12 (33.3%)		6/12 (50.0%)		2/12 (16.7%)	
c. How adequate is the variety of instructional resources used?	0	2	9	1	0	0		2/12 (16.7%)		10/12 (83.3%)			

Comments

Eight of the evaluating committees provided comments on the instructional materials of the industrial arts program in their schools. These comments can be summarized as follows:

1. Five committees reported an acute shortage of instructional aids such as: charts, maps, posters, graphs, pictures, cutaways, and models.
2. Three committees reported the lack of instructional hardware and software, such as motion picture projectors, slide projectors, overhead projectors, tape recorders, transparencies, slides, film loops and tapes.
3. Three committees mentioned the absence of a shop library or reading room with up-to-date books, reference materials, periodicals and descriptive materials.

Direction of Learning
Sub-Section D: Methods of Evaluation

"Evaluation" is the process by which one chooses, among values or places, a value upon something. It is used here to indicate the procedure by which the results of instruction in industrial arts are appraised.

Direction of Learning Sub-Section D: Methods of Evaluation (Table 18) presents the frequency of the responses and a percentage for each of the twelve items in the checklist that deal with methods of evaluation of industrial arts in the twelve participating schools. These data indicate that

Table 18

Frequency and Percentage of Self-Evaluation Committees on the Direction of Learning D: Methods of Evaluation
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
1. Is evaluation considered an integral part of the teaching-learning process?	3	9	0	0	0	0		12/12 (100%)					
2. Is a continuous program of evaluation employed to determine the extent to which students achieve established goals or objectives?	2	10	0	0	0	0		12/12 (100%)					
7. Is evaluation related to differences among student aptitudes, abilities and knowledge?	2	9	0	1	0	0		11/12 (91.7%)		1/12 (8.3%)			

Table 18 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
8. Is individual progress recorded and does it become a part of the accumulated record of the student, to be used for guidance purposes?	3	8	1	0	0	0		11/12 (91.7%)		1/12 (8.3%)			
9. Are data obtained from tests and other evaluative devices used to help students know if they have done well and what needs to be improved?	4	6	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
3. Is student participation in the evaluation procedures a part of the learning situation?	0	7	4	0	1	0		7/12 (58.3%)		4/12 (33.3%)		1/12 (8.3%)	
4. Do teachers carefully record objective data and anecdotal information?	1	6	4	1	0	0		7/12 (58.3%)		5/12 (41.7%)			

Table 18 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 | 3	2 | 1	ND	NA
5. Are periodic evaluations made of current course content and methods?	3	4	4	0	1	0		7/12 (58.3%)	4/12 (33.3%)	1/12 (8.3%)	
6. Is evaluation of student progress based on a variety of related criteria and suitable techniques of appraisal?	1	6	5	0	0	0		7/12 (58.3%)	5/12 (41.7%)		
10. Are comparisons made between articles developed by students in the industrial arts program and commercial products?	0	5	7	0	0	0		5/12 (41.7%)	7/12 (58.3%)		
11. Are records made of each student injury in the workshop and compiled and analysed regularly?	0	4	3	2	3			4/12 (33.3%)	5/12 (41.7%)	3/12 (25.0%)	
12. Are industrial arts equipment and facilities inspected periodically by fire prevention and safety experts?	0	0	0	12	0				12/12 (100%)		

of the twelve items in the checklist, nine were rated as High (excellent or good) by 51 percent or more of the participants, and two items were rated as Low (fair to poor) by 49 percent or more of those who were involved in the study.

The items that were rated as High, in rank order, were: 1 (100%); 2 (100%); 7 (91.7%); 8 (91.7%); 9 (83.3%); 3 (58.3%); 4 (5-.3%); 5 (58.3%); and 6 (58.3%). It appeared that members of the Self-Evaluation Committees were satisfied with the content of these statements.

The two statements that were rated as Low were: 12 (100%) and 10 (58.3%). An analysis of these two items indicates that the members of the Self-Evaluation Committees were dissatisfied with: the absence of periodic inspections of their industrial arts facilities by fire prevention and safety experts; and the lack of opportunity for comparison to be made between articles developed by students in the industrial arts program and those developed through commercial production.

The remaining item, with the percentage rating as High by the Self-Evaluation Committees, was 11 (33.3%).

Evaluations of Methods of Evaluations (Table 19) presents the frequency of the responses and a percentage for each of the four items that deal with the evaluations of methods of evaluations of industrial arts in the twelve participating schools. These data indicate that two items were rated as High (excellent or good) by 51 percent or more of the participants, while two items were rated as Low (fair or

Table 19

Frequency and Percentage of Self-Evaluation Committees on the Evaluations of Methods of Evaluation
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement			
	Favourable		Undesirable					High	Low	Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4 3	2 1	ND	NA
a. How satisfactory are the evaluation procedures used in the industrial arts program?	2	7	3	0	0	0		9/12 (75.0%)	3/12 (25.0%)		
c. How appropriate are the evaluation instruments?	1	8	3	0	0	0		9/12 (75.0%)	3/12 (25.0%)		
d. How effectively are changes implemented following an evaluation of the program?	1	4	6	0	1	0		5/12 (41.7%)	6/12 (50.0%)	1/12 (8.3%)	
b. How satisfactory is the inspection of the school shop and its facilities?	1	1	4	3	3	0		2/12 (16.7%)	7/12 (58.3%)	3/12 (25.0%)	

poor) by 49 percent or more of the participants. The item statements rated as High in rank order were: "a" (75%) and "c" (75%). The content of each of these statements appeared to be satisfactory to the members of the Self-Evaluation Committees.

The two statements that were rated as Low were: "b" (58.3%) and "d" (50%). An analysis of these two items indicated that the members of the Self-Evaluation Committees were not satisfied that there was adequate inspection of their industrial arts facilities or any effective changes were implemented following an evaluation of the program.

Comments

Two of the Self-Evaluation Committees provided comments on Methods of Evaluation. These comments can be summarized as follows:

1. Two committees stated that safety inspection was left to the industrial arts instructors.
2. One committee suggested that health, safety, and fire inspections should be undertaken regularly by expert inspectors from the Health,Building and Fire Departments of the Public Service.

Outcomes

The term "outcomes" refers to an end result when teachers and others attempt to appraise what has happened to the students as a result of their participation in an industrial arts course. They are mainly concerned with the students' behavioral changes and learned skills.

Outcomes of Industrial Arts (Table 20) presents the frequency of responses and a percentage for each of the ten items in the checklist that deal with the outcomes of industrial arts in the twelve participating schools. These data indicate that seven items were rated as High (excellent or good) by 51 percent or more of the respondents, while three items were rated as Low (fair to poor) by 49 percent or more of the respondents. The seven items that were rated as High in rank order were: "b" (83.3%); "g" (83.3%); "c" (66.7%); "e" (66.7%); "f" (66.7%); "h" (66.7%); and "d" (58.3%). An analysis of these items revealed that members of the Self-Evaluation Committees were satisfied with the content of these statements.

The three items that were rates as Low were: "j" (83.3%); "i" (66.7%); and "a" (50%). An analysis of these items indicated that the participants were dissatisfied because: students developed few constructive leisure time activities or hobbies relating to industrial arts; students lacked knowledge and understanding of the properties and use of important raw materials; and students possessed only partial information about the various industrial occupations and industries.

Table 20

Frequency and Percentage of Self-Evaluation Committees on the Outcomes of Industrial Arts
N = 12

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
b. To what extent are students developing a reasonable degree of skill in the use of basic tools and machines?	2	8	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
g. To what extent are students developing positive attitudes and good practices relating to safety?	1	9	2	0	0	0		10/12 (83.3%)		2/12 (16.7%)			
c. To what extent do students develop an ability to organize and perform their work efficiently?	0	8	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			
e. To what extent do students develop an appreciation for good design, construction and craftmanship?	0	8	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			

Table 20 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Applicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
f. To what extent are students developing the ability to select, care for, and use industrial products intelligently?	0	8	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			
h. To what extent do students possess a knowledge and understanding concerning basic industrial processes?	1	7	4	0	0	0		8/12 (66.7%)		4/12 (33.3%)			
d. To what extent are interests, aptitudes, and abilities in students discovered and developed?	0	7	4	1	0	0		7/12 (58.3%)		5/12 (41.7%)			
a. To what extent do students possess a knowledge and understanding concerning the properties and uses of important raw materials?	1	5	6	0	0	0		6/12 (50.0%)		6/12 (50.0%)			

Table 20 (cont'd)

Item Statement	Rating of Participants						No Response	Percentage of Participants Rating Item Statement					
	Favourable		Undesirable					High		Low		Missing But Needed	Neither Ap- plicable Nor Desirable
	4	3	2	1	ND	NA		4	3	2	1	ND	NA
i. To what extent do students possess information about various industrial occupations and industries?	1	3	7	1	0	0		4/12 (33.3%)		8/12 (66.7%)			
j. To what extent do students develop constructive leisure-time activities or hobbies relating to industrial arts?	0	2	7	3	0	0		2/12 (16.7%)		10/12 (83.3%)			

Special Characteristics of Industrial Arts

The term "special characteristics" of industrial arts refers to any activity that serves to enhance the industrial arts program. These may include photographic clubs and adult evening classes.

This section of the research instrument was divided into five categories for the collection of information on the special characteristics of industrial arts in the schools in Antigua. The first and second categories consisted of the statements: "Describe any changes recently implemented in the industrial arts program," and "Describe any changes planned or anticipated for the future." The third and fourth categories consisted of the following questions: "In what respects is the industrial arts program in need of improvement?" and "In what respects is the industrial arts program most satisfactory and commendable?" The fifth category consisted of the following statement: "Recommend, in order of priority, steps for the correction of weaknesses in the program." The more common and more significant reports were organized and listed according to each of the five categories as follows:

1. Describe any changes recently implemented in the industrial arts program: (a) eight committees reported that the craft caning was introduced and has added a new dimension to the industrial arts program; (b) four committees reported that courses in general electricity were

introduced at Forms III to V; (c) one committee reported that it recently introduced a course in building construction at Forms IV and V; and (d) one committee reported the introduction of general metals over the past two terms.

2. Describe any changes planned or anticipated for the future: (a) six committees reported plans for the introduction of metals, general electricity, automotives and plastics during the commencement of the academic year, 1982; (b) six committees reported that a commitment was undertaken by the Ministry of Education to introduce the Caribbean Examination Council (CXC) Syllabus in industrial arts by 1982 and to phase out the London and Cambridge General Certificate of Education Syllabus by 1984; (c) six committees reported a decision to introduce in 1982 a Ministry of Education Examination in industrial arts at Form III, after the initial three years of industrial arts. Success in this examination would fulfill entry requirements to the Engineering Department of the Antigua State College.

3. In what respects is the industrial arts program most in need of improvement? (a) seven committees reported that their industrial arts program needed better laboratory management, and general maintenance of tools and equipment on a regular basis; (b) six committees reported that their industrial arts program needed improvements in the number and quality of staff, increase in floor

space, storage, additional pieces of tools and equipment, and a good supply of materials; (c) six committees reported that a generous allocation of funds would bring about general all round improvement to the program in the acquisition of tools, equipment, materials, textbooks, reference materials, audio-visual equipment and software; (d) six committees reported that the industrial arts program should be expanded to include metals, general electricity, automotives, plastics, graphic arts, and general construction; (e) three committees reported that more time should be allocated to industrial arts; and (f) three committees reported that more in-service training programs on a regular basis would improve teacher performance and thus improve industrial arts.

4. In what respects is the industrial arts program most satisfactory and commendable? (a) four committees reported that industrial arts provides students with some basic skills that can assist them in making career choices; (b) three committees reported that industrial arts helps students to develop leisure time activities; (c) three committees reported that an industrial arts background better prepares students for entry into the world of work, and enhances their safety awareness, provides them with some knowledge of labour management relations and instills a desirable attitude to work; and (d) three committees reported that woodwork, technical

drawing, and general electricity were very commendable in terms of students' competency and achievement.

5. Recommend, in order of priority, steps for the correction of weaknesses in the program: (a) seven committees recommended that staffing be increased through the recruitment of well-qualified instructors, and the continuous training of an adequate number of instructors on a yearly basis; (b) six committees recommended the upgrading and improvement of facilities to correspond with the training and competencies of the instructors, and that programs be expanded as additional personnel are recruited, until the program achieves a broad base; (c) five committees recommended that all schools should have an industrial arts department head, who would have dialogue with educational officials, and the principal for better working conditions, added facilities, curriculum modification, and general program improvement; (d) four committees recommended that the salaries of industrial arts teachers should be made more lucrative to attract a higher calibre of instructors; and (e) three committees recommended the creation of a central store with a wide range of industrial arts supplies for issue to the schools, to ensure a constant and regular supply of much needed materials and hardware for the industrial arts curriculum.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study reports the results of an evaluation of the industrial arts program in the schools of Antigua. Industrial arts was introduced to the school's curriculum many years ago and has become an integral part of the schools' offerings. However, personnel in these schools have never evaluated their program to establish to what degree their objectives are being realized. The major objective of this study was to evaluate: (a) the organization; (b) the nature of offerings; (c) the physical facilities; (d) the direction of learning; (e) the outcomes; and (f) the special characteristics of industrial arts in the schools of Antigua.

The scope of the study was State-wide and involved the formation of a Self-Evaluation Committee for each school, comprising the principal, the industrial arts teachers and two senior industrial arts students.

The data collection instrument used to gather pertinent information was a modified version of Section 4-10 of the Evaluative Criteria 5th Edition, 1978, published by the National Study of Secondary School Evaluation.

The instrument was modified in these ways:

1. Visiting evaluation committees were not used; instead a self-evaluating committee was structured, comprising of teachers and students.
2. Section VII, General Evaluation of Instruction in Industrial Arts, was omitted from the instrument.
3. Several of the instructions to participants were revised, thus making them more appropriate to the situation in Antigua.
4. The five-point rating scale was reduced to a four-point scale: 4 - Excellent; 3 - Good; 2 - Fair; and 1 - Poor. Two additional categories were included--ND - Missing but Needed and NA - Neither Applicable nor Desirable.
5. A number of inappropriate statements were dropped from the checklist and the general evaluations. Other statements were rewritten to comply with the Caribbean and Antigua terminology. All statements were rewritten as questions to facilitate the rating scale and to eliminate the temptation of simple answers of yes and no.

After receiving permission to conduct the study from the Chief Education Officer, the researcher established contact with the Acting Supervisor of Industrial Arts, who was assigned to coordinate the survey. Copies of the instrument were prepared and sent to Antigua for distribution to the schools. Six weeks later, the researcher travelled to Antigua to meet with participants and to further explain the purpose of the research and solicit their participation.

Within six weeks of the visit, twelve completed copies of the instrument were received, representing a 100 percent return.

The researcher returned to Edmonton where the collected data were analysed and the frequency distribution of the various ratings assigned by the participants was recorded in tabular form and reported as percentage. The items in each section of the research instrument were tabulated separately and arranged in rank order according to percentage. Item statements receiving a rating of 51 percent or higher within the scale of 4 (excellent) or 3 (good) were recorded as favourably accepted by the Self-Evaluation Committees. Similarly, item statements receiving a rating of 49 percent or higher within the scale of 2 (fair) or 1 (poor) were recorded as undesirable by the Self-Evaluation Committees and were in need of modification or improvement. In the remaining categories, item statements receiving a rating of 49 percent or higher and classified as ND (Missing but Needed) would be welcomed in the industrial arts program. Similarly, a 49 percent or higher rating of an item considered as NA (Neither Applicable nor Desirable) would be ignored by the industrial arts program.

Some of the more common and more pertinent comments that were made by the members of the Self-Evaluation Committees for each section or sub-section of the research instrument were organized and presented at the end of each section. No rank order was used for these comments.

The analysis of the tabulated data is presented in Chapter IV. The remainder of this chapter will present the conclusions and recommendations based on this analysis.

Conclusions

The conclusions of the study were based on the number of items in each section of the instrument which were considered to be rated as favourable, undesirable, missing but needed, or inapplicable.

Organization of Industrial Arts

Seven of the 16 items in the checklist dealing with the Organization of Industrial Arts were rated as favourable. Five items were rated as undesirable; the remaining four items received an inconclusive rating from participants of the survey. It was concluded, therefore, that the data in Table 1, the organization of industrial arts as measured by the instrument, were generally undesirable to the participants. This conclusion is supported by the fact that two of the three items in the General Evaluations of the Organization of Industrial Arts were also rated as undesirable.

A number of major concerns were documented by participants in their comments on the organization of industrial arts. The concerns were over: the inadequate funding of the program; the narrow scope of the program which needs to be broadened to include metalwork, building construction, auto-mechanics, plumbing and general electricity; time for instruction was always insufficient to conduct a good lesson; the space provided for instruction was grossly inadequate thus resulting in over-crowding; and class sizes were too large, thus impeding the range of activities necessary to develop beginning experiences.

Nature of Offerings

From an analysis of Table 4, these data show that of the 17 items in the checklist dealing with the Nature of Offerings of Industrial Arts, 13 were rated as favourable. It was concluded, therefore, that the nature of offerings, as measured by the instrument, was generally favourable to the participants. This conclusion was not supported by the fact that three of the five items in the General Evaluations of the Nature of Offerings of Industrial Arts were rated as undesirable by the participants.

Although the nature of offerings of industrial arts appeared to not provide a clear-cut decision towards favourableness, three major items caused concern to the evaluators. As indicated by their responses to items "b", "c" and "e" of the general evaluations of the nature of offerings of industrial arts, they were unhappy with the limited scope and sequence of courses provided to challenge the interests, abilities, and developmental needs of students; the many handicaps militating against providing exploratory or try-out experiences with a variety of tools, materials and industrial processes; and the lack of prescription to develop student responsibility and leadership.

Physical Facilities

The majority of participants were dissatisfied with the Physical Facilities of Industrial Arts. Following an analysis of data presented in Table 6, it was found that of the 38 item statements directed at the physical facilities, only nine were rated as favourable. Another nine items were rated as ND - Missing but Needed. Six items were rated as undesirable, while 14 received an inconclusive rating. It was concluded, therefore, that the physical facilities of industrial arts was generally undesirable to the participants. This conclusion was supported by the fact that four of the five items in the General Evaluations of Physical Facilities of Industrial Arts were also classified and rated as undesirable.

A critical analysis of the comments provided by the participants indicated deficiencies in the physical facilities in three broad areas: (a) the design and layout of the shop; (b) the utilities provided in the shop; and (c) the tools and equipment provided in the shop.

Direction of Learning

A. Instructional Staff. From an analysis of the data in Table 8, seven of the twelve items in the checklist dealing with Instructional Staff were rated as favourable.

The evaluation of instructional staff, therefore, was positive. This conclusion was supported by the fact that four of the five items in the General Evaluations of Instructional Staff were also rated as favourable.

B. Instructional Activities. From an analysis of data in Table 14, of the 19 items in the checklist dealing with Instructional Activities of Industrial Arts, 11 were rated as favourable. It was concluded, therefore, that the instructional activities of industrial arts were generally favourable. This conclusion was also borne out by the fact that the three items in the General Evaluations of Instructional Activities of Industrial Arts were also rated as favourable.

C. Instructional Materials. Two of the eight items of the checklist, Table 16, dealing with Instructional Materials of Industrial Arts were rated as favourable. Three items were rated as undesirable, while the remaining three items were classified as ND - Missing but Needed. It was concluded, therefore, that instructional materials of industrial arts, as measured by the instrument, were generally undesirable to the evaluators. This conclusion was also upheld by the ratings given to the three items in the General Evaluations of Instructional Materials of Industrial Arts, since two of these items were rated as undesirable, and one item was rated as favourable.

From a review of the data and the comments made by the evaluators, it was concluded that industrial arts teachers in the majority of the schools were in serious need of all types of instructional materials. There was a need for reference materials and a greater variety of textbooks. Posters, charts, graphs, pictures, and instructional aids were unavailable. Descriptive and commercial products for instructional purposes were also absent. Teachers would welcome instructional films, filmstrips, slides, tapes, transparencies, current periodicals, pamphlets, and other software for student use, along with film projectors, overhead projectors, slide projectors, tape recorders and photo copying machines.

D. Methods of Evaluation. The analysis of data in Table 18 indicated that nine of the twelve items in the checklist dealing with the methods of evaluation of industrial arts were rated as favourable. Participants generally favoured the methods of evaluation. This conclusion was not strongly supported by the ratings of the four items in the General Evaluations of Methods of Evaluaion of Industrial Arts, since two of these four items were rated as undesirable and the remaining two items rated as favourable.

The expressed concerns of the participants were for adequate inspection of industrial arts facilities by health, fire and safety inspectors; after the program had been evaluated, the recommended changes were not implemented.

Outcomes of Industrial Arts

From an analysis of the data in Table 20, the evaluating committees rated seven of the ten items in the General Evaluations of the Outcomes of Industrial Arts as favourable.

Despite the overall satisfaction with the outcomes of industrial arts, the evaluators mentioned two serious limitations to the program. The students had few leisure time activities, or hobbies, and did not know or understand very much about the properties and use of important raw materials.

There were no comments reported for this section of the research instrument.

Special Characteristics of Industrial Arts

Most committees provided comments on the Special Characteristics of Industrial Arts in their schools. With regards to changes recently implemented in the program, all committees had the craft caning added to their program within the last two years. Four schools introduced general electricity during the same period. Within the last year, one school added building construction to its course offerings for senior students; while another school provided a general metal course for the Third, Fourth and Fifth Forms.

The Planned Changes for Industrial Arts included the introduction of metals, automotives, general electricity and plastics in all schools beginning the academic year of 1982.

In 1982, the courses from the Caribbean Examination Council (CXC) Syllabus in industrial arts will be introduced, and the Cambridge Industrial Arts Syllabus will be phased out by 1984. The Ministry of Education has scheduled the reintroduction of a Form III Industrial Arts Examination in 1982.

Evaluators listed comments on the most crucial changes needed in the Industrial Arts Program. There is a need for better laboratory management, and the maintenance of tools and equipment on a regular schedule. There is also a need for an increase in the number and quality of staff, increase in floor and storage space, the addition of a number of pieces of equipment, and a good supply of materials. There is also a need for a generous allocation of funds for the support of the program. Finally, more in-service training programs are required on an ongoing basis.

The Industrial Arts Program was evaluated as most satisfactory in the acquisition of basic skills essential for career choices; the acquisition of better attitudes, as students enter the world of work; and the satisfaction in the high standard of performance in woodwork, technical drawing, and the enthusiasm for general electricity.

The participants of the study recommended these changes for the correction of weaknesses in the industrial arts program:

1. Increase staffing;
2. Upgrade in training standards;
3. Upgrade and improve facilities;

4. Appoint an industrial arts department head in each school;
5. Create a central store for industrial arts supplies; and
6. Increase salary remuneration for industrial arts teachers.

Recommendations for the Education Department, Antigua

The following recommendations based on the findings and conclusions of the study are offered as possible courses of action for improving the industrial arts program in the schools of Antigua. The recommendations are not presented in order of priority.

Organization

It is recommended that because of the unsatisfactory organizational pattern of industrial arts resulting in insufficient class periods, large classes, restricted course offerings, apathy among staffers, non-coordination of courses and the limited scheduling of non-teaching conference periods, that a head of industrial arts department be appointed to each school to coordinate the program and so eliminate these imbalances.

It is recommended that because of the organizational pattern of industrial arts shops -- the limited area of shop space; the number of work stations; the tools, equipment, and supplies provided--and because of the safety requirements, class size should not exceed 16 students.

It is recommended that the industrial arts program be made available for adult evening classes in order to gain maximum utilization of the shop facilities and to make citizens of the community more aware of the role and function of industrial arts in the education of their children.

It is recommended that in view of the large number of participants indicating a need for budgetary increases, that the possibility of increasing financial support for the purchase of industrial arts supplies be considered.

It is recommended that all industrial arts teachers be assigned a period free from teaching duties during the school day in which they can do planning, have student conferences and maintain laboratory equipment.

Nature of Offerings

It is recommended that the industrial arts curriculum be expanded to include new and innovative concepts and more instructional content to reflect such subject areas as electricity, electronics, power mechanics, graphic arts, materials testing, building construction, and plastics. The current industrial arts program is too narrow in scope and does not provide a broad enough building base.

It is recommended that a multiple activity type industrial arts program replace the unit shop approach at the junior secondary level, and that students pursue a minimum of six areas in an academic year, from the following:

woods, metals, drafting, plastics, graphic arts, materials testing, ceramics, general electricity and automotives. This approach will require fewer teachers and fewer pieces of tools and equipment.

Physical Facilities

It is recommended that serious consideration be given to the improvement of physical facilities with specific attention to the following items: space for industrial arts facilities be increased to provide for additional work and storage space, finishing booth, and a design, planning and reading section to be located away from noise and dust.

It is recommended that when additional space is planned, room layout, lighting and ventilation be designed for more effective instruction.

It is recommended that power equipment be provided in each industrial arts area when additional space is available; locker facilities, and more adequate washing and drinking facilities be provided for both students and teachers.

It is recommended that tackboards, display cases, and audio-visual aids, including films, filmstrips, slides, projectors and tape recorders be provided.

It is recommended that office and filing space be provided for teachers.

It is recommended that when planning new industrial arts facilities or renovating existing ones, that the planning team should include industrial arts personnel who can discuss their needed specifications and incorporate these in the plan.

Instructional Materials

It is recommended that the Ministry of Education institute an instructional materials center for the purpose of providing in-service education to industrial arts teachers in the preparation of instructional materials that are required for the industrial arts program.

It is recommended that consideration be given to the possibility of providing teachers with more teaching aids, reference materials, current literature, and regular supplies of materials.

Methods of Evaluation

To alleviate the expressed concerns of industrial arts teachers, it is recommended that regular inspections of industrial arts facilities be carried out by health, fire and electrical inspectors.

Outcomes of Industrial Arts

It is recommended that more leisure time activities or hobbies be incorporated in the practical pursuits of industrial arts so that students can develop them at home, in clubs or social gatherings.

For Further Research

From the findings of this study, the following areas of further research are suggested:

1. It is recommended that other evaluative studies of the industrial arts program be conducted to examine the program in terms of the extent to which it meets the aspirations of the parents and community, and the needs of the students as measured by their success after graduation.
2. It is recommended that in response to the number of teachers indicating a desire for further training, the possibility of assisting teachers in obtaining further education be examined.
3. It is recommended that a study be carried out to examine the feasibility of admitting girls into the industrial arts program.
4. It is recommended that the adequacy of general safety precautions practised in the schools, where an industrial arts program is in effect, be examined.
5. It is recommended that an evaluation procedure be done every four to five years for comparison purposes and to see if conditions are improving.

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APPENDIX A

LETTERS

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND
VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

January 30, 1981

The Executive Secretary
National Study of School Evaluation
2201 Wilson Boulevard
Arlington, Virginia 22216
U.S.A.

Dear Sir/Madam:

I am a student from the State of Antigua, West Indies, currently enrolled at the University of Alberta in a program leading to the Master of Education Degree in Industrial and Vocational Education.

In fulfillment of the requirements for this degree, I must write a thesis, and for my research I have decided to "Evaluate the Industrial Arts Program in the Schools in Antigua. The students in the program there range from 11 to 18 years. Evaluative Criteria 4th Edition, Section 4-10, published by the National Study of School Evaluation, are suitable instruments of evaluation for my research. My thesis supervisor, Dr. D.R. Young, who has recommended them, has suggested that I obtain permission from the National Study of School Evaluation to use section 4-10.

I write also to seek your kind assistance in securing a copy of the latest edition and the necessary permission to use the instrument. I can assure you that should permission be granted, this fact would be noted in an appropriate place in the reporting section of my study.

Your kind assistance and cooperation in this matter is greatly appreciated.

Yours sincerely,

Alfred M. Alexander

Alfred M. Alexander

AMA/jl

DONALD C. MANLOVE
[illegible]

HELEN [illegible]
[illegible]
Falls Church, Virginia [illegible]

NSSE

NATIONAL STUDY OF SCHOOL EVALUATION

Chairman
H. DURELL RUFFIN
Southern Association of Colleges and Schools
[illegible] Street N.E.
Atlanta, Georgia [illegible]

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Advisory Members
WILLIAM L. PHARIS
National Association of Elementary School Principals
PAUL B. SALMON
American Association of School Administrators
SCOTT THOMSON
National Association of Secondary School Principals

February 25, 1981

Mr. Alfred M. Alexander
Faculty of Education
Department of Industrial and
Vocational Education
The University of Alberta
Edmonton, Alberta, Canada
T6G 0Y1

Dear Mr. Alexander:

The *Evaluative Criteria*, Fourth Edition is now out of print. It may very well be that you would wish to examine Section 4-10 of the *Evaluative Criteria*, Fifth Edition. The instrument was revised in 1978. I am enclosing a price list and order form for your use in obtaining the latest edition.

Permission is granted to use Section 4-10 for your doctoral research. Please acknowledge permission to use this instrument and send me a copy of your results.

Sincerely yours,

Donald C. Manlove

Donald C. Manlove
Executive Director

DCM:rai
enclosure

ONLY COPY AVAILABLE
SEULE COPIE DISPONIBLE

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND
VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

January 30, 1981

The Chief Education Officer
Ministry of Education
Culture and Youth Affairs
Church Street
St. John's
Antigua

Dear Sir:

In fulfillment of one of the requirements for the Master of Education Degree from the University of Alberta, I must write a thesis. For my research I have decided to "Evaluate the Industrial Arts Program in the Schools in Antigua and Barbuda."

I writer, therefore, to seek your kind assistance in securing the necessary permission from the Ministry of Education to carry out the research. This exercise will necessitate the cooperation and support of the principals, industrial arts teachers, and some senior students from those schools with industrial arts programs.

An exhaustive survey will be done, and an evaluative questionnaire will be the major data collection instrument. If permission is granted data collection is planned for May 1981.

Your kind assistance and cooperation in this matter is greatly appreciated.

Yours sincerely,

Alfred M. Alexander

AMA/jl

C. 6

Communications on this subject
should be addressed to:—
Ministry of Education, Culture
& Youth Affairs,
Church Street,
St. John's.
and the following
Number quoted. E.C.P. 230

21st February, 19 81

Mr. Alfred Alexander
University of Alberta
Faculty of Education,
Department of Industrial and
Vocational Education,
Edmonton, Alberta, Canada
T6G 0Y1

Dear Mr. Alexander,

I have pleasure in inviting you to "Evaluate the Industrial Arts Program in the Schools in Antigua and Barbuda." It is observed that the survey will take place this year May, so we look forward to seeing you then.

You may wish, to get in touch with Mr. Peterson about the plan.

All the best.

Yours truly.

Whitfield M. Harris
Chief Education Officer.

WMH/cf

APPENDIX B

QUESTIONNAIRE

INDUSTRIAL ARTS
SELF-EVALUATION

Instructions

This evaluative instrument is designed for the school personnel to make a self-evaluation of Industrial Arts.

Procedure

The school should first set up a committee comprising the principal, the industrial arts teacher or teachers, and two senior industrial arts students or two ex-students who had completed the industrial arts course. The principal will convene the evaluation meetings and will chair the sessions. The committee should meet to discuss and study the purpose and procedures of this evaluation, before proceeding through their duties.

The points for evaluation of the industrial arts program are organized into the following areas:

Part I Organization. This section covers such matters as how the curriculum is developed and whether there is continuity in the organization of studies in the area of industrial arts.

Part II Nature of Offerings. This section deals with the adequacy of the industrial arts program.

Part III Physical Facilities. This section includes such consideration as tools, furniture, visual aids and general classroom conditions.

Part IV Direction of Learning. This section is comprised of four areas as follows: (a) instructional staff--covers preparation background and organization of staff; (b) instructional activities; (c) instructional materials; and (d) methods of evaluation.

Part V Outcomes. This section seeks to find out what students have learned in the program.

Part VI Special Characteristics of the Industrial Arts Program.

Organization

Each part of the evaluation consists of items which are found in an effective industrial arts program. From these items the committee is asked to make a judgement and rate the industrial arts program in their school in accordance with the philosophy and objectives of the program, and the needs of students. In rating, the committee's chairman should simply encircle the number corresponding to the committee's judgement on that item.

If the provision or item is not found the school but it is needed, encircle the ND or NEEDED rating.

If the provision or items is neither desirable nor applicable, encircle the NA or NOT APPLICABLE rating.

Each part of the instrument is provided with a space for the committee's comments. Comments are absolutely valuable and are considered essential for the entire evaluation. This researcher would appreciate if the committee would write comments on their program that will go towards desirable improvements.

Criteria for Making Judgement on Rating

When a judgement is made on an evaluation item, use the rating defined below. These ratings should be considered in the light of how well the industrial arts program is fulfilling the objectives and the needs of the students.

Criteria for Judgement	Rating
Excellent	4
Good	3
Fair	2
Poor	1
Missing but needed	ND
Neither applicable nor desirable	NA

INDUSTRIAL ARTS

Name of School ______________________ Date __________

Self-evaluation by:

Name: Position:

Name: Position:

Name: Position:

Name: Position:

Name: Position:

Name: Position:

Name: Position:

I ORGANIZATION

Checklist

			Poor	Fair	Good	Excellent
1. To what extent is the industrial arts program in your school available to all students?	ND	NA	1	2	3	4
2. Is emphasis placed on a variety of beginning experiences in several industrial arts areas at the lower secondary school, with more experiences provided in the upper secondary school?	ND	NA	1	2	3	4
3. To what extent does the industrial arts courses provide for a sequence of graded experiences?	ND	NA	1	2	3	4
4. Are specific industrial arts objectives or goals identified with each course offering?	ND	NA	1	2	3	4
5. To what extent is the industrial arts program organized so that adjustments can be made as new situations demand?	ND	NA	1	2	3	4
6. Are industrial arts facilities available to students, under proper supervision, outside of regular class time?	ND	NA	1	2	3	4
7. Are class periods of sufficient length to produce progress in learning?	ND	NA	1	2	3	4
8. In determining class sizes is consideration given to such factors as type of activity, facilities available, and safety of students?	ND	NA	1	2	3	4
9. Are adequate funds provided in the industrial arts budget to support all aspects of the program?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
10.	Is the program development a co-operative endeavor involving education administrators, teachers, and lay people?	ND	NA	1	2	3	4
11.	Do the staff members cooperate with the public relation efforts of the school?	ND	NA	1	2	3	4
12.	Is the industrial arts program coordinated with other courses?	ND	NA	1	2	3	4
13.	Are repair and production jobs permitted in the industrial arts program only if they are desirable educational experiences for students?	ND	NA	1	2	3	4
14.	Is a daily non-teaching conference period, free from regular assigned duties provided for each teacher carrying a full schedule for classes?	ND	NA	1	2	3	4
15.	Are career information and guidance an integral part of the program?	ND	NA	1	2	3	4
16.	Do teachers of the various forms plan together to develop a sequential program in industrial arts?	ND	NA	1	2	3	4

Evaluations

a.	To what extent are industrial arts courses available to all students?	ND	NA	1	2	3	4
b.	How appropriate are schedules, time allotments, and class sizes for industrial arts course offerings?	ND	NA	1	2	3	4
c.	How adequate is the fanancial support for the industrial arts program?	ND	NA	1	2	3	4

Comments

Supplementary Data

(Complete the table on the following page for all industrial arts courses)

Table
Supplementary Data

Title of Course	Form	Required or Elective	Enroll-ment	Average Class Size	Per Week	
					No. of Periods	Total Minutes

II NATURE OF OFFERINGS

Checklist

			Poor	Fair	Good	Excellent
1. To what extent do the industrial arts courses provide opportunities for students to plan, construct, and evaluate in terms of their interests and aptitudes?	ND	NA	1	2	3	4
2. Are experiences provided in selected areas so that a degree of skill in the use of common tools and machines may be developed commensurate with the student's ability and the scope of the program?	ND	NA	1	2	3	4
3. Is a broad content developed in each course in the program from representative industrial processes and materials appropriate for a school shop?	ND	NA	1	2	3	4
4. Are meaningful learn-by-doing opportunities planned with real materials, processes and products of industry?	ND	NA	1	2	3	4
5. Has the part that industry played in the development of the Antigua way of life been emphasized in each course area?	ND	NA	1	2	3	4
6. Are specific efforts in the program directed towards the development in each individual, an attitude of pride and interest in doing useful things?	ND	NA	1	2	3	4
7. Are specific efforts directed towards the development of a working knowledge of industrial materials and processes?	ND	NA	1	2	3	4
8. Is emphasis placed on the development of better understanding of such problems as appropriateness of material to use, quality of workmanship, design, and function?	ND	NA	1	2	3	4

			Poor	Fair	Good	Excellent
9. Are specific efforts made to develop an awareness of the variety of activities performed in our industrial environment that provide possibilities for leisure activities?	ND	NA	1	2	3	4
10. Is an overview of working conditions and labour-management problems included in the instructional program?	ND	NA	1	2	3	4
11. Is emphasis placed on developing an ability to select, care for, and use industrial products intelligently?	ND	NA	1	2	3	4
12. Are basic skills such as reading, writing, arithmetic, speaking and listening continually emphasized and made a part of the instructional program?	ND	NA	1	2	3	4
13. Is emphasis placed on a continuous and coordinated department-wide program of safety?	ND	NA	1	2	3	4
14. Are activities in the program organized to provide significant group activities and projects that involve situations that are likely to involve problems?	ND	NA	1	2	3	4
15. Are student-centered activities emphasized in the teaching-learning process?	ND	NA	1	2	3	4
16. Are experiences provided to acquaint the student with the world of work, including its changing nature, and to help develop a wholesome attitude towards work?	ND	NA	1	2	3	4
17. Are students provided an opportunity for in-depth specialization in areas of their respective aptitudes and interests?	ND	NA	1	2	3	4

Evaluations

				Poor	Fair	Good	Excellent
a.	To what extent are the information and experiences offered in the program related to modern industry?	ND	NA	1	2	3	4
b.	To what extent are scope and sequence of courses related to the interests, abilities and developmental needs of students?	ND	NA	1	2	3	4
c.	To what extent do the offerings provide exploratory or tryout experiences with a variety of tools, materials, and industrial processes?	ND	NA	1	2	3	4
d.	To what extent do students understand labour-management problems?	ND	NA	1	2	3	4
e.	To what extent is student responsibility and leadership developed?	ND	NA	1	2	3	4

Comments

III PHYSICAL FACILITIES

Checklist

1. Are facilities appropriately located as a unit for students as well as for adult evening classes? ND NA 1 2 3 4

2. Is the total floor area consistent with accepted standards? ND NA 1 2 3 4

3. Is natural light effectively controlled to eliminate glare and is sufficient supplemental artificial light provided, properly diffused and distributed? ND NA 1 2 3 4

4. Are floors in good condition and are suited to the area in which they are located? Are precautions taken against slippery floors and special attention being given to machine areas? ND NA 1 2 3 4

5. Is exhaust ventilation equipment available in areas where excessive heat, fumes, gases and dust are produced? ND NA 1 2 3 4

6. Where needed, are properly designed and located gas, water and compressed air facilities provided? ND NA 1 2 3 4

7. Do the workshops have appropriate entrance and exist doors? ND NA 1 2 3 4

8. Is the ceiling height appropriate for the activities being conducted? ND NA 1 2 3 4

9. Are fire extinguishers of the correct type and size provided for each workshop? ND NA 1 2 3 4

10. Are wall surfaces durable and easily cleaned? ND NA 1 2 3 4

11. Are appropriate washing facilities provided? ND NA 1 2 3 4

				Poor	Fair	Good	Excel.
12.	Are display cases provided of sufficient size, properly lighted and appropriately located?	ND	NA	1	2	3	4
13.	Is convenient office or desk space provided?	ND	NA	1	2	3	4
14.	Is filing space adequately provided for all necessary records, pamphlets, and illustrative materials?	ND	NA	1	2	3	4
15.	Is there appropriate storage for tools?	ND	NA	1	2	3	4
16.	Are the principles of color dynamics followed for each workshop and on equipment?	ND	NA	1	2	3	4
17.	Is safe storage provided for all supplies including accommodation for full-length stock?	ND	NA	1	2	3	4
18.	Is adequate storage provided for individual and class projects under construction as well as for items in the assembling and finishing stage?	ND	NA	1	2	3	4
19.	Are appropriate storage lockers provided for students?	ND	NA	1	2	3	4
20.	Is equipment arranged with reference to sequence of operations and their relationship to other areas. Is adequate clearance, as dictated by the function of the machine provided around all equipment?	ND	NA	1	2	3	4
21.	Are work stations sufficient in number to provide flexibility?	ND	NA	1	2	3	4
22.	Is there a finishing area which is adequate in size, appropriately located, properly lighted and ventilated, easily supervised and relatively free from dust?	ND	NA	1	2	3	4
23.	Is there provided a demonstration and discussion area with space for each student?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
24.	Are library and planning facilities provided with adequate space for the storage of books, magazines and folders?	ND	NA	1	2	3	4
25.	Are facilities and equipment provided for using audio-visual instructional materials?	ND	NA	1	2	3	4
26.	Do the quantity, type, and variety of tools, instruments and equipment provided meet the needs of the program?	ND	NA	1	2	3	4
27.	Are all power machines and manually operated equipment provided with effective guards which are used by the operators at all times?	ND	NA	1	2	3	4
28.	Are unit-type machines with self-contained motors used throughout the program; and is the equipment adapted to the size and maturity of the students, i.e. height from floor to the working surface of a machine, horsepower, speed and capacity?	ND	NA	1	2	3	4
29.	Are conveniently located and appropriately painted switches or control boxes provided on all power machines. Are these easily accessible from the position of the operator?	ND	NA	1	2	3	4
30.	Are appropriately identified safety zones marked around machines and in areas where there are potential hazards?	ND	NA	1	2	3	4
31.	Is there a master electrical panel conveniently located in each workshop?	ND	NA	1	2	3	4
32.	Are machines wired into the building provided with disconnect switches?	ND	NA	1	2	3	4
33.	Are machines provided with low voltage and overload protection where needed?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
34.	Are all tools and equipment properly maintained?	ND	NA	1	2	3	4
35.	Are appropriate safety clothing and protective devices provided and utilized?	ND	NA	1	2	3	4
36.	Are adequate chalkboards and bulletin boards provided?	ND	NA	1	2	3	4
37.	Are the facilities clean and adequately maintained?	ND	NA	1	2	3	4
38.	To what extent are good planning and organization in evidence?	ND	NA	1	2	3	4

Evaluations

a.	How satisfactory is the space and layout of the shop?	ND	NA	1	2	3	4
b.	How adequate are the tools and equipment?	ND	NA	1	2	3	4
c.	How satisfactory are health and safety measures?	ND	NA	1	2	3	4
d.	How adequate are provisions for storage?	ND	NA	1	2	3	4
e.	How adequate is the arrangement for maintenance of equipment?	ND	NA	1	2	3	4

Comments

IV DIRECTION OF LEARNING

A. Instructional Staff

Checklist

			Poor	Fair	Good	Excellent
1. Is a well defined philosophy of education held by industrial arts teachers?	ND	NA	1	2	3	4
2. To what extent are the industrial arts teachers properly qualified and certificated?	ND	NA	1	2	3	4
3. Do the industrial arts teachers possess competency in a variety of teaching methods?	ND	NA	1	2	3	4
4. Do the teachers recognize the importance of activities in the instructional program?	ND	NA	1	2	3	4
5. Do the teachers invite parents and community reactions to the industrial arts program?	ND	NA	1	2	3	4
6. To what extent do the industrial arts teachers strive to keep abreast of professional literature and research in the field of education?	ND	NA	1	2	3	4
7. To what extent do industrial arts teachers discuss their curriculum and sponsor activities which help their colleagues to a better understanding of the program?	ND	NA	1	2	3	4
8. Are industrail arts teachers aware of teaching problems in other areas and work for the improvement of the whole school program?	ND	NA	1	2	3	4
9. Do industrial arts teachers understand counselling procedures and guidance services to help students with educational and vocational choices?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
10.	Are industrial arts teachers qualified in first aid and safety procedures?	ND	NA	1	2	3	4
11.	To what extent do industrial arts teachers maintain active participation in in-service education through formal study?	ND	NA	1	2	3	4
12.	To what extent do industrial arts teachers maintain an active interest in professional advancement, including participation in educational organizations?	ND	NA	1	2	3	4

Evaluations

a.	To what extent do industrial arts teachers possess a well-defined point of view towards industrial arts education?	ND	NA	1	2	3	4
b.	To what extent do industrial arts teachers possess satisfactory qualifications?	ND	NA	1	2	3	4
c.	To what extent have industrial arts teachers informed themselves about current educational literature and research?	ND	NA	1	2	3	4
d.	To what extent do industrial arts teachers discuss educational problems with fellow teachers, their administrators, and with the lay public?	ND	NA	1	2	3	4
e.	How adequate is the technical knowledge of industrial arts teachers in the area of teaching responsibility?	ND	NA	1	2	3	4

Comments

Supplementary Data (Instructional Staff)

Indicate the number of professional staff found in each of the following categories. (Do not count the same individual more than once in a, b, c and d, respectively.)

a. Educational level:

- Less than Industrial Arts Teacher's Certificate __________
- Industrial Arts Teacher's Certificate __________
- Bachelor's Degree __________
- Master's Degree __________

b. Number of hours of (approximate) preparation in industrial arts per term:

0 - 11 __________

12 - 23 __________

24 - 48 __________

More than 48 __________

c. Number of years since last formal study in industrial arts:

0 - 3 ____________
4 - 7 ____________
8 - 12 ____________
More than 12 ____________

d. Number of years of industrial arts teaching experience:

0 - 2 ____________
3 - 5 ____________
6 - 15 ____________
More than 15 ____________

2. Industrial arts training is offered in three regions. Comment on the scope, suitability and effect of each training program.

Comments:

a. Training in St. Lucia:

b. Training in the United Kingdom:

c. Training in Canada:

B. Instructional Activities

				Poor	Fair	Good	Excel.
1.	To what extent are learning activities in the industrial arts program related directly to the attainment of desired student behavior changes identified with special industrial arts activities?	ND	NA	1	2	3	4
2.	Are course outlines and lesson plans developed for each activity or series of activities?	ND	NA	1	2	3	4
3.	To what extent do teachers recognize student ability levels in developing each phase of the industrial arts program?	ND	NA	1	2	3	4
4.	Are specific efforts directed towards the attainment of appropriate social relationships and good work habits and attitudes?	ND	NA	1	2	3	4
5.	Do students work in groups and exchange ideas in the solution of problems?	ND	NA	1	2	3	4
6.	To what extent does industrial arts education attempt to familiarize students with management and production practices of industry?	ND	NA	1	2	3	4
7.	To what extent do the industrial arts activities provide an opportunity for students to become familiar with, and to use many of the basic tools and machines of industry?	ND	NA	1	2	3	4
8.	Do students learn how a variety of commercial products are made?	ND	NA	1	2	3	4
9.	Do students study the sources of materials and supplies, their characteristics and limitations?	ND	NA	1	2	3	4
10.	Do students develop appropriate drawings or plans and follow a systematic order of procedure in relation to a problem or project?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
11.	To what extent are community resources used as aids to instruction?	ND	NA	1	2	3	4
12.	Are numerous activities planned to help students develop qualities of leadership?	ND	NA	1	2	3	4
13.	Do students draw on the many out-of-school sources of information in fulfilling assignments?	ND	NA	1	2	3	4
14.	Are provisions made for students to participate in related extra-curricular activities?	ND	NA	1	2	3	4
15.	To what extent do students take an active part in the safety program by serving as student safety supervisors, solving thought-inducing safety problems, and taking safety tests?	ND	NA	1	2	3	4
16.	Do teachers employ a wide variety of suitable materials and techniques during instruction?	ND	NA	1	2	3	4
17.	Are field trips related to industrial arts experience provided?	ND	NA	1	2	3	4
18.	To what extent are audio-visual materials used in the instructional process?	ND	NA	1	2	3	4
19.	ARe the career goals of students identified and discussed as they explore possible industrial occupations?	ND	NA	1	2	3	4

Evaluations

a.	How effectively do instructional activities relate to student needs and program goals?	ND	NA	1	2	3	4
b.	How adequate is the planning and preparation for instructional activities?	ND	NA	1	2	3	4
c.	How effective is the teaching of industrial arts?	ND	NA	1	2	3	4

Comments

C. Instructional Materials

Checklist

			Poor	Fair	Good	Excel.
1. Are up-to-date textbooks available?	ND	NA	1	2	3	4
2. Are appropriate reference materials available in each area?	ND	NA	1	2	3	4
3. Are descriptive materials and commercial products available for instruction?	ND	NA	1	2	3	4
4. Are periodicals, pamphlets and suitable materials for student use available in each area of instruction?	ND	NA	1	2	3	4
5. Are films, filmstrips, slides and projectors provided for instructional aids?	ND	NA	1	2	3	4
6. Are teacher prepared materials such as study guides, course outlines, and resource units available?	ND	NA	1	2	3	4
7. Are posters, charts, graphs and pictures to aid instruction available?	ND	NA	1	2	3	4
8. Is the overhead projector a prominent piece of equipment in the classroom?	ND	NA	1	2	3	4

Evaluations

a. How extensively are teaching guides followed?	ND	NA	1	2	3	4
b. To what degree are quality and relevant text/reference materials used?	ND	NA	1	2	3	4
c. How adequate is the variety of instructional resources used?	ND	NA	1	2	3	4

Comments

D. Method of Evaluation

Checklist

			Poor	Fair	Good	Excel.
1. Is evaluation considered an integral part of the teaching-learning process?	ND	NA	1	2	3	4
2. Is a continuous program of evaluation employed to determine the extent to which students achieve established goals or objectives?	ND	NA	1	2	3	4
3. Is student participation in the evaluation procedures a part of the learning situation?	ND	NA	1	2	3	4
4. Do teachers carefully record objective data and anecdotal information?	ND	NA	1	2	3	4
5. Are periodic evaluations made of current course content and methods?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
6.	Is evaluation of student progress based on a variety of related criteria and suitable techniques of appraisal?	ND	NA	1	2	3	4
7.	Is evaluation related to differences among student aptitudes, abilities and knowledge?	ND	NA	1	2	3	4
8.	Is individual progress recorded and becomes a part of the accumulated record of the student, to be used for guidance purposes?	ND	NA	1	2	3	4
9.	Are data obtained from tests and other evaluative devices used to help students know what they have done well and what needs to be improved?	ND	NA	1	2	3	4
10.	Are comparisons made between articles developed by students in the industrial arts program and commercial products?	ND	NA	1	2	3	4
11.	Are records made of each student injury in the workshop and compiled and analyzed regularly?	ND	NA	1	2	3	4
12.	Are industrial arts equipment and facilities inspected periodically by fire prevention and safety experts?	ND	NA	1	2	3	4

Evaluations

a.	How satisfactory are the evaluation procedures used in the industrial arts program?	ND	NA	1	2	3	4
b.	How satisfactory is the inspection of the school shop and its facilities?	ND	NA	1	2	3	4
c.	How appropriate are the evaluation instruments?	ND	NA	1	2	3	4
d.	How effectively are changes implemented following an evaluation of the program?	ND	NA	1	2	3	4

Comments

V OUTCOMES

Evaluations

				Poor	Fair	Good	Excel.
a.	To what extent do students possess a knowledge and understanding concerning the properties and uses of important raw materials?	ND	NA	1	2	3	4
b.	To what extent are students developing a reasonable degree of skill in the use of basic tools and machinery?	ND	NA	1	2	3	4
c.	To what extent do students develop an ability to organize and perform their work efficiently?	ND	NA	1	2	3	4
d.	To what extent are interests, aptitudes and abilities in students discovered and developed?	ND	NA	1	2	3	4
e.	To what extent do students develop an appreciation for good design, construction, and craftmanship?	ND	NA	1	2	3	4

				Poor	Fair	Good	Excel.
f.	To what extent are students developing the ability to select, care for, and use industrial products intelligently?	ND	NA	1	2	3	4
g.	To what extent are students developing positive attitudes and good practices relating to safety?	ND	NA	1	2	3	4
h.	To what extent do students possess a knowledge and understanding concerning basic industrial processes?	ND	NA	1	2	3	4
i.	To what extent do students possess information about various industrial occupations and industries?	ND	NA	1	2	3	4
j.	To what extent do students develop constructive leisure-time activities or hobbies relating to industrial arts?	ND	NA	1	2	3	4

VI SPECIAL CHARACTERISTICS OF INDUSTRIAL ARTS

1. Describe any changes recently implemented in the program.

2. Describe any changes planned or anticipated for the future.

3. In what respects is the industrial arts program most in need of improvement?

4. In what respects is the industrial arts program most satisfactory and commendable?

5. Recommend, in order of priority, steps for the correction of weaknesses in the program.

APPENDIX C

PARTICIPATING SCHOOLS

APPENDIX C

Participating Schools

All Saint
Clare Hall
Cobbs Cross
Greenbay
Holy Trinity
Jennings
Liberta
Old Road
Ottos
Pares
Princess Margaret
Villa